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A TREATISE

ON

VESICO-VAGINAL FISTULA.

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THE operation of Vesico-Vaginal Fistula is illustrated by seventeen cases. The curative treatment includes two obliterations of the vagina, one of which was obtained by the method known under the name of Episiorraphy, being the only case on record where this method has been crowned with a perfect success. Annexed is a critical review of the history of the operation of vesico-vaginal fistula in France, Germany, England and America.

It will be proper to remark here, that the greater part of this treatise has been in manuscript since 1860.

TO

ALEXANDER II,

CZAR OF ALL THE RUSSIAS,

The great Liberator of the Nineteenth Century;

Whose gigantic strides in the cause of human liberty, scientific attainments,

And liberal appreciation of all that tends towards the overthrow of prejudice and the Welfare of Mankind,

Challenges the admiration of the World,

This Treatise is respectfully dedicated,

BY

THE AUTHOR.

VESICO-VAGINAL FISTULA.

A. Definition—Causes—Operation—After-Treatment.

B. Cases.

C. History of the Operation.

A. Definition.—Vesico-vaginal fistula is an affliction in which the vagina has become the excretory duct of the bladder; or in which the urethral aperture is transferred to the anterior wall of the vagina; a condition which places the sufferer, too often, *hors de société*, and condemns her to the utmost wretchedness; but this definition does not exhaust the subject. Let me, therefore, copy a picture drawn by the great Dieffenbach, so true, so precise, so terribly beautiful: "A vesico-vaginal fistula," he says, "is the greatest misfortune that can happen to a woman, and the more so, because she is condemned to live with it, without the hope to die from it; to submit to all the sequelæ of its tortures till she succumbs either to another disease or to old age. There is not a more pitiable condition than that of a woman suffering from a vesico-vaginal fistula. The urine constantly flowing into the vagina, and partially retained there and heated, runs down the labia, perinæum, and over the nates and thighs, producing a most intolerable stench. The skin of these parts becomes inflamed and covered by a pustulous eruption. An insupportable itching and burning sensation tortures the patient, so much so, that she scratches the skin to bleeding. Many tear the incrustated hair out of the pudendal parts, calling on death to relieve them from their suffering. The comfort of a clean shift is unknown to them; it is soiled as soon as put on; a comfortable bed, that grave for all sorrows and afflictions, is not their lot, for it will soon be drenched with urine. Many of the wealthier classes are, therefore, condemned for ever to the straw. The air of the room of the unfortunate woman nauseates the visitor and drives him off. All family ties are torn asunder by this terrible disease. The husband has an aversion for his own wife; the tender mother is exiled from the circle of her own children. She sits, solitary and alone in the cold, on a perforated chair. This is not fiction, but naked truth; and the cure for such an evil is the prize for which we labor."

These unfortunate women must ever be the subjects of our deepest sympathy; but it is not only philanthropy which induces the surgeon to be so indefatigable in his endeavors to close a fistulous opening in the bladder, to free the wretched from their suffering, their despondency, their banishment; it equally springs from an ambition to overcome difficulties or obstacles thought to be insurmountable.

Causes.—In the majority of instances a vesico-vaginal fistula originates through the mortification of a portion of the vagina and bladder, in consequence of these parts being compressed by an impacted portion of the fœtis, the head or breech pressing against the os pubis, thus preventing the circulation

of the blood in the tissues involved. Mortification may occur during a short as well as a protracted labor. The sloughing of the mortified parts may take place before the fœtus is born, a few hours or days afterwards, or it may happen at a still later period (the case of Adler, Iowa, 29 days after delivery, when the slough was only partially separated)

In the majority of cases the injury happens at the first labor, though it is not uncommon to meet with cases where children have been born previously without causing any injury of this character.

Amongst other causes of the origin of this disease, we find the following mentioned: Stone in the bladder during parturition (I. B. Brown has reported such a case, and I think Case V in the sequel will be found to be another illustration); or this accident may follow an operation for stone (Case V), or attend extending cancer of the uterus to the vagina and bladder; syphilitic ulcers; injuries caused by pessaries; accidental injuries, and amongst these the "*unskillful use of the forceps*," "*the rash attempts of the practitioner to deliver the fœtus by instruments*" (Liston).

If, at the last moment, a physician is called upon after days of labor-pain have been endured by the unrelieved sufferer, and the practitioner finds the use of the forceps necessary, and a fistula should afterwards become established, all the ignorant, and their name is legion, at once lay the blame at the door of the physician. I, for my part, have no patience with such unfounded accusations, and those who are loudest in blaming others, would talk quite differently if the case had happened to themselves. If there is any blame to be imputed in the matter, let it rest with those who call for assistance when too late. I emphatically deny the charge that forceps cause fistula, and I will be supported by the majority of physicians, as well as by the fact, that a scrupulous examination into the history of these injuries will reveal that in most of them, no instrument had been used at all, or if used, had been at a period when the presumption was strong that mortification had already taken place. If "the rash attempts of practitioners to deliver by means of instruments" had any foundation in fact, how is it to be explained that the statistical reports of the lying-in hospitals in Germany seldom refer to such cases? There is no other explanation of the fact, and I speak from experience, except in the early application of the forceps, which are used *in extenso* for the instruction of the students; while, according to the theorists, just the reverse ought to be the case. But we often see objects through the warm medium of our own imagination, that are not strictly warranted by facts.

Simultaneously with the appearance of the fistula, the discharge of urine by the natural outlet ceases, and, in most instances, an entire cessation of the catamenia follows; though it is occasionally found to be uninterrupted.

OPERATION.—The operation for the relief of vesico-vaginal fistula ought to be undertaken as soon as the fistulous opening becomes stationary, and its edges cicatrized. A woman recently delivered, or with milk still in her breast, should not be operated upon. It has been observed that several women so operated upon have died in consequence of this otherwise harmless operation.

The Materials Employed. — The apparatus for operating in this class of diseases consists of—

1st. A double lever speculum [fig. 1] called the duck-bill speculum (Sims), made of brass, galvanized with silver and polished to reflect sufficient light upon the parts operated upon. This speculum will not fatigue the assistant, if grasped with the full hand in the centre, having one branch resting on the dorsum of the hand, which is placed on the lower part of the sacrum of the patient.

2d. A sharp hook [fig. 2] for taking hold of the edges of the fistula, in order to be vivified.

3d. One or two straight knives [fig. 3] to pare off the borders.

4th. A needle fixed in a handle [fig. 4], the stem of the needle to be 1.5^{mm} thick and 9^{cm} long; made of iron, so that it can be bent; the point of steel, 1^{cm} in length, spear-shaped, and with an eye sufficiently large to take up the silver wire. (Such a needle has answered me in all cases in which the sewing was done anterio-posteriorly.)

5th. A curved needle [fig. 5], to be used when the sutures have to be applied in the long axis of the vagina.

6th. A blunt hook [fig. 6] for directing the point of the needle, when through the walls of the fistula.

7th. A pair of forceps to carry the thread into the eye of the needle.

8th. Two pair of scissors, a straight one to clip the wire with, and another one curved over its plates. This latter one is often used with benefit in cutting off portions of the mucous membrane of the borders.

9th. A suture adjuster [fig. 7] (Bozeman's modified).

10th. A wire twister [fig. 8] (Cogshill's).

11th. A collection of silver catheters [fig. 9].

12th. A silver wire of 0.5^{mm} in diameter. The best and purest material is obtained by melting chloride of silver.

Position of the Patient.—Two positions have been advocated—1st, on knees and elbows; 2d, on one side, the left being preferred (Sims). The most convenient of the two for the patient, and I think she deserves some consideration, is the latter one. It is, besides, the best in which to administer chloroform. After a purgative has been given, the day previous to the operation, to evacuate the bowels, the patient is placed on a table and mattress covered with oil cloth, which is large enough to hang down into a bucket for the reception of the water which is injected into the vagina during the operation. Supporting the head of the patient with pillows, she is brought near the end of the table, her thighs bent to a right angle with her body. The speculum is then introduced into the vagina and held by an assistant. It is advisable to operate on a sunny day, and to place the patient so that the sun will shine into the speculum, when, by the reflected light, the parts operated upon will be most favorably shown.

Paring the borders of the Fistula.—This is executed by holding up, with a sharp hook, those parts of the mucous membrane of the fistulous borders which are to be removed. The edges must be denuded to the extent, if possible, of 10^{mm}, including the border of the mucous membrane of the bladder. With fistulas, where the long axis runs in a transverse or oblique direction, and this, according to my experience, occurs in a majority of cases, I am in the habit of cutting first around the *lower* margin to the full extent that the mucous membrane should be removed. By taking this course, the operator will not suffer any obstruction of the parts operated upon by blood, which would happen if the upper border was first pared off. In cases where the bladder is inverted and protruding, a circumstance not uncommon in large fistulas, the best method to keep it out of the way, is by introducing sponges through the fistulous opening into the bladder. This will also have the effect of elevating and distending the edges, and do away with the great difficulty experienced by some surgeons in denuding the edges of the fistula. The time of operation will be much shortened by employing an assistant to syringe the bleeding parts with cold water, whilst the edges are denuded. Success depends, in the main, on the proper execution of this the most essential part of the operation, viz: in properly denuding the parts to be brought in contact.

Application of the sutures and co-aptation of the edges of the wound.—The needle is now entered outside the lower border of the wound, and pushed through its whole thickness; re-entered in the upper margin from inside the bladder, being thrust equally

through its walls so as to come out above the denudation. As soon as the point of the needle appears here, the blunt hook is brought behind it, and, by pressing it against the vagina, the needle is thrust through with facility, until its eye is visible. Hooking now the point of the needle below the eye towards the operator, the silver wire is easily introduced in the eye by a steady hand, or with the aid of forceps. When the wire is located in the needle, the latter is withdrawn, and the wire will bend and follow. This mode of sewing is so simple, that whoever tries it once will give up all other contrivances. It is obvious that this needle can only be used in fistulas with the long axis running in a transverse or oblique direction, where also the edges are united anterio-posteriorly. In cases where the sutures should be applied in the long axis of the vagina, the curved needle will be brought in use. The sutures are placed 4^{mm} distant from each other. The length of each silver wire depends upon the depth at which the fistula is located. It must be of sufficient length that a hold of it can be obtained outside the vagina, after the loop has been formed.

In giving the above direction for pushing the needle through the whole wall of the fistulous borders, I am aware of having only a few surgeons on my side, but my best advocate is the success of my operations. The objections raised against it are mostly based on hypothetical speculations, mere theories, without corroboration by facts. The fear of wounding the mucous membrane of the bladder is a spectre, not founded in reality. While some do not hesitate to cut off the borders of its mucous membrane, yet they fear the puncture of a needle, not knowing how many times they have unconsciously caused it. In my operations I have invariably thrust the needle through both walls of the fistula, in all making *one hundred and ninety needle wounds of the bladder*, and yet not a single bad result has followed—not one new fistulous opening was thereby produced! This does not speak much in favor of the theories advanced by the opponents of this course. Not only do I deny the allegations concerning the bad results which are said to be occasioned by wounds of the vesical mucous membrane; but further, I do firmly believe, that a great deal of the success I have obtained in operations of this character, is justly due to this very cause, viz: that I have taken up the bladder in the sutures.

As soon as the sutures are applied, the edges of the wound are co-aptated by the use of the suture-adjuster. Catching both threads of each suture by the slice of the instrument, and sliding the latter down to the fistulous edges whilst holding the ends of the suture in the left hand, the denuded surface of the borders is brought in co-aptation and the firmness of the wire will prevent them from re-opening. The edges to be brought together must be under no tension. Should this happen, then lateral incisions through the mucous membrane of the vagina on one or both sides of the fistulous opening are, under the circumstances, the best means in our power to prevent it. The idea is Dieffenbach's; though failing in most of his operations for the cure of these fistulas, he has equally failed to establish its value. I have given these lateral incisions a fair trial, and can not help assigning them a prominent place in the success I have met with in obliterating fistulas of great extent by one operation. Should it happen that in co-aptating the edges, portions of the mucous membrane of the bladder should come forward, a catheter carried through the urethra and held by an assistant will keep them out of the way. After the sutures are properly adjusted they will then be twisted three or four times, which may be accomplished either by the fingers or Cogshill's twister. The sutures will then be cut off above the twist.

Some surgeons say that the edges must not be united before bleeding has been arrested, to accomplish which, pressure, ice, and time have been recommended. The best

method to arrest bleeding, according to my experience, consists in tying the sutures, and I never have had cause to repent having done so.

In my earlier operations I was in the habit of giving preference to the method of Bozeman, so highly recommended by its distinguished inventor. I have operated successfully with it, yet, in using the interrupted twisted suture I have met with the same success. I have applied the button and twisted suture combined, simultaneously in the same case, and both methods have proved to be equally good. If I give preference to the interrupted twisted suture, I do it from no other reason than that it is more simple in its application. Wherever the wire-loops are too much tightened, be it by using the button or the twisted suture, the wire will cut into the tissue. And why should it be otherwise? I have given the silver wire sutures a very extensive application, using them for years in nearly every kind of operation where sutures were required. The result has invariably proved that whenever the sutures were drawn very tight, or the parts united under any tension, that the wire cut into the tissues. It is the maximum of absurdity to claim for the silver wire an exception from physical laws. What holds good in that respect for organic substances, like silk or hemp thread, holds equally good for metallic wire, whether it be lead, iron, gold or silver.

The preference given to metallic sutures is based upon its entire innocuousness when imbedded in animal tissue; which can not be said of sutures made from organic matter. The latter are liable to be imbibed with urine and blood by capillary attraction, which fluids, when decomposed, will give rise to suppuration in the stitch-holes, and thereby cause new fistulas or render a cutting of the suture necessary. Silver is, next to gold, the most malleable and ductile of all metals, and this will make it the best material for sutures. Professor Simpson, of Edinburgh, who stands on the iron platform, says, "I prefer the blue iron wire, because it is stronger, cheaper, and altogether more easily worked than silver wire." In the latter part of his sentence Professor Simpson is entirely wrong; silver is more easily worked than iron. His other reasons are no better. A silver wire of 0.5^{mm} diameter (which is the wire we use) will carry a weight of 10 pounds before it breaks, whilst an iron wire of the same diameter will hold a weight of 30 pounds. Iron is therefore stronger than silver; but does Professor Simpson intend to use, in tying a suture, a force sufficient to break even a silver wire? In collecting the ends of each wire cut off and that portion which has served as the suture, nothing will be lost. In again melting the pieces, nearly the whole weight of the silver, with the exception of a small quantity which might be lost in the melting process, will be obtained. The expense, therefore, incurred in using the "costly silver wire" would not, I think, bear hard on the pocket of the surgeon, even if he should be as poor as Lazarus. In the end "the best is always the cheapest."

After-Treatment.— After the operation is finished, the patient should be transferred to a bed containing only a well-stuffed mattress, with an aperture in the centre, lined with an india rubber tube, of sufficient length to reach down to a bucket, placed beneath the bed for the collection of the urine as well as the water, with which the bladder is washed out by syringing. A catheter is then introduced through the urethra, and permanently lodged in the bladder, to prevent the accumulation of urine in it. The catheters I am using, and of which it is advisable to have a collection of different sizes and lengths on hand, are made from thin silver plate, with from three to four rows of holes in them. The diameter of the holes must not be larger than one millimetre, otherwise the mucous membrane of the neck of the bladder will be caught therein, causing a distressing pain to the patient when the catheter is removed.

The mouth of the catheter should contain a large flattened ring, to prevent the urine from running back on its outside. There should be, in addition, two rings opposite each other, through which a piece of tape is carried and fastened to a bandage across the abdomen—one end of the tape going over the nates and fastened on the back, the other in front. The catheter must be removed twice a day to clean it from the urinary deposits, which may be best accomplished by nitric acid so much diluted with water as not to dissolve the silver. I have been in the habit of ordering injections with cold water every thirty minutes during the first forty-eight hours. The advantages gained by this mode of treatment are obvious. The patient will always lie on a dry bed, can move at will from one side to the other, and the urine will under no circumstances accumulate in the bladder.

To prevent the urine coming in contact with the wound has always been considered of great importance in the after-treatment, and a distinguished surgeon has gone so far as to propose the puncture of the bladder above the os pubis, and the introduction of a catheter to draw off the urine, besides recommending the introduction of a catheter into the urethra every hour or two. But there is no lack of precisely the contrary opinion. Some do away entirely with the application of the catheter, confining the patient only to bed. I have made a trial of doing away with both bed and catheter (*vide* Case XVII) with a successful result; but I am not yet prepared to advance an opinion based upon a single fact, and to recommend, as some have done, the abolishment of that part of the after-treatment which has been considered as of the greatest import; though it may prove in the end to be nothing but a great bugbear. The time of removing the sutures ought to be extended to ten or fourteen days. The innocuousness of the wire in animal tissue should prevent the surgeon from removing the sutures earlier. I have observed in two of my cases, one on the sixth (Case VII), the other on the seventh day (Case IX) after the operation, that in injecting the bladder with water, some leaking occurred from a part of the co-aptated edges; yet when the sutures were removed on the twelfth day, the fistulas were perfectly and permanently cured.

The act of removing the sutures is simple; while the twist is held by the forceps and a little raised, the loop is cut through with a pair of scissors, after which the sutures are pulled out.

"A most important feature in the after-treatment," says Professor Simpson, of Edinburgh, "is the constant administration of such doses of opium or morphia as shall suffice to keep the patient fully under its influence. It fulfils," says this distinguished obstetrician, "the three imperative indications; that of subduing the movements of the bladder, of locking up the bowels, and of enabling the patient to maintain for a long period the supine position, which would otherwise soon become intolerable." With all due respect for the discoverer of the anæsthetic action of chloroform, I can not help saying, that if there is any thing in the after-treatment of the operation in question which might be dispensed with, it is surely the opium. Amongst the cases reported by me there are some where an early evacuation of the bowels took place, though opium had freely been given; and I have seen others, when no opium had been administered, remain constipated during the whole time of the confinement in bed. In some cases the patient suffered more from the retention of the fæces, than either from the operation or from being laid up in bed. Having observed that many patients were much benefitted by an evacuation of the bowels, I have adopted the rule, instead of giving opium, to evacuate the bowels by water injections whenever it was required, and I have never had reason to repent having done so. Besides, theoretically considered, I am unable to comprehend

what harm could possibly result to the parts operated upon by an evacuation of the bowels. "What is the use of experience if not guided by reflection?"

No other operation, comparatively speaking, causes so little reaction on the system as the operation for vesico-vaginal fistula. During the time the patient is confined to her bed, a light diet should be adhered to. Physic will seldom be required.

One word about the administration of chloroform: The operation of vesico-vaginal fistula is not a very painful one; I have operated on some women who did not feel the slightest pain; so far the anæsthetic might be dispensed with; but there is another reason why I should always offer its administration, and that reason is best felt by the patient.

B. CASES.

Case I. — Of the first case operated upon by me, in February, 1858, and published in the *New Orleans Medical News and Hospital Gazette*, in March, 1858, I will only mention here that success was attained by one operation, although the patient had been previously operated upon unsuccessfully by other physicians in this city. The fistula was situated near the neck of the bladder, five centimetres distant from the external mouth of the urethra, measured one centimetre in the long axis, which lay in a transverse direction. The pared edges of the fistulous opening were united anterio-posteriorly with five silver wires, employing Bozeman's method. All the ligatures were passed through the coats of the bladder, without causing either a new fistula or any other bad symptom. Hardly any pain was experieneed by the patient, who was operated upon, at her request, without the administration of chloroform.

Case II.—*Vesico-raginal fistula with prolapsus of the inverted bladder; the fistula situated* 35^{mm} *above the orifice of the urethra; largest diameter, transverse, measuring* 45^{mm}*; button suture. Cure.*

M. H., a native of Ireland, was over 30 years old, when she, for the first time, became pregnant. According to her statement, she carried the child to the full term, had been in labor-pain three days, and was delivered of a dead child by instruments. Seven days after delivery she observed urine coming from the vagina. The fistula was of four years standing; no operation having ever been attempted, and the patient had never menstruated since its appearance. The configuration of the hairy part of the vulva reminded me forcibly of the incrustations observed in salt works, the hair being enveloped by urinary deposits. The inner part of the thighs were exeoriated to a great extent, as also the nates, and both were eovered by a pustulous eruption. Through the rent in the vagina the inverted fundus of the bladder protruded extensively, presenting a blood-eolored tumor of the size of a hen's egg, completely closing the entrance of the vagina. After the reposition of the bladder three fingers could easily be introdueed into the fistulous opening. The lumen of the vagina was shortened to a depth of 55^{mm}. The posterior edge of the fistula was like a stretched cord, dividing the vagina into two parts. The upper portion eontained what remained of the neck of the uterus. The posterior edge of the fistula was to a considerable extent dragged into the fistulous opening. On the 7th of May, 1858, the woman was brought under the influence of chloroform. In order to get aecess to the upper edge of the fistula, for the purpose of paring it off, it was necessary to make two lateral incisions near the eorners of the fistulous opening, by whieh the margin was relieved from its confinement. Both edges of the fistula were then vivified to the extent of on eentimetre, and united by seven silver wire

sutures ("button suture"). Almost all of the sutures were passed through the mucous membrane of the bladder, to obtain a perfect co-aptation of the edges. Opium was administered to keep the bowels confined; a catheter was adjusted, and the patient placed upon a mattress. The catheter was removed twice a day and cleaned in diluted nitric acid. Cold water injections into the bladder were frequently made during the first forty-eight hours. On the third day, in trying to remove the catheter, a difficulty was experienced, some of the mucous membrane of the neck of the bladder having become imbedded in its openings, which were of 3^{mm} in diameter. This led me to exchange the catheter for one, the holes of which were not larger than 1^{mm}, and since that time I have never experienced the same difficulty. The sutures were removed on the tenth day; the fistula was found to be perfectly closed. Injecting the bladder to its full extent with water, not a drop escaped through the vagina. The patient did not long enjoy her happiness. About three months later she died from yellow fever, a disease in which silver sutures are unavailing.

Case III.—*Vesico-vaginal fistula; 1 centimetre above the neck of the bladder; its long axis transverse, measuring* 8^{mm}; *one operation. Cure.*

C. B., an otherwise healthy and stout woman, 24 years old, called on me in August, 1858, to ascertain whether or not she was in the family way. She stated that a physician had told her to be careful not to get with child again, and that she suffered from an incurable disease. About three years previously she had been confined with her first child; the labor pains had lasted about forty-eight hours; the child had been born with the breech presentation; no instruments were used, and she had been delivered by a midwife. The urine had come from her "privates" eight days after her delivery, and continued doing so ever since; she could retain her "water" for a considerable time when out of bed; menstruation had not ceased. She had suffered an abortion two years after her first delivery. Having made an exploration, I told her that although I could not tell her for a certainty whether or not she was in the family way, I felt assured that her "incurable disease" could be remedied. Consenting to the operation, I ordered an evacuation of her bowels, and fixed the next day for the operation. Chloroform being administered, the woman was laid on her knees, her head, chest and abdomen being supported by pillows. The lever speculum was then introduced, the edges of the fistula pared off and united by five silver wire sutures (button suture). Two grains of opium having been given, the patient remained constipated five days, when, complaining much of headache, her bowels were relieved by injections, after which the headache left her. The button with the sutures were removed on the tenth day; the fistula had disappeared. I kept her in bed three days longer, when the catheter was taken away to be reapplied every three hours. On the fourteenth day after the operation the woman was discharged cured.

It was subsequently proved that she had been in the family way at the time of the operation. When about seven months pregnant she called on me again. Finding the pelvis normal, and the vagina in a proper condition, I saw no necessity for inducing premature labor. On the 2d of March, 1859, I was sent for; but when I arrived she had already given birth to a child, and without a reproduction of the fistula.

Remarks.—This case proves that menstruation will not always cease with the production of a vesico-vaginal fistula; and it also does not speak in favor of the assertion advanced by Braun, in Vienna, that sterility was a necessary consequence of such a fistula, "because the urine would destroy the spermatozoa," a view which has already been refuted by Esmarch, in Kiel, and J. B. Brown, in London.

Case V.—*Vesico-vaginal fistula; five millimetres above the neck of the bladder; one operation; Cure. Second operation for stone in the bladder, Colpocystotomia; new fistula; operation; Cure.*

The previous history of this case (remarkable in more than one respect) I will copy from the *Medical News and Hospital Gazette*, of New Orleans, for 1854, vol. 1, p. 62 :—T. D., a native of France, has resided in New Orleans for the past four or five years. On the fifteenth of October, after a painful and tedious labor, which lasted three days, she was delivered of a dead child. She was attended during confinement only by an old negro woman. The morning succeeding her delivery, she perceived that there was a flow of urine per vaginam. This induced her to enter the Charity Hospital, where she was admitted six days (one month, according to the patient's statement to me) after her delivery. She only remained three days, and having undergone no treatment, she left without having derived any benefit. She returned home, where she was visited by several physicians, one of whom, after a careful examination, pronounced the case one of prolapsus uteri, and introduced a pessary, which he ordered should remain undisturbed; this came away one month after its introduction, when, finding that no relief had been obtained, the patient did not re-introduce it.

She left New Orleans soon after for Mobile, where, having consulted a physician for intermittent fever, with which she was at the time afflicted, she was correctly and for the first time informed of the nature of her malady, and told that an operation would be necessary to effect a cure. She returned soon afterwards to New Orleans, determined to enter the Charity Hospital, in which institution she was admitted. She was admitted on the 10th of October, and was placed under the charge of Dr. E. Martin. On the 12th of October, the patient having been brought into the operating theatre at the hospital, an attempt was made to place her properly under the influence of chloroform; but this, although but a small quantity was used, was found to produce such violent and dangerous symptoms of syncope, that its use was suspended, and it was determined to operate without it. The operation was performed in the following manner: The patient was placed upon her back, on a table provided with a mattress, and her legs fixed at right angles with her thighs, which were kept separated by two assistants. Upon the introduction of three valves of a speculum, two of which passed laterally, the third inferiorly, the fistula was brought into view. This was situated in the centre of an elevation of a darker color than the surrounding parts, and corresponded to the situation of the trigone cervicale of the bladder; its diameter was about two lines and a half. With a straight bistoury Dr. Martin made a semi-lunar incision in the vesico-vaginal septum, which commenced at the posterior portion of the fistula, immediately below the elevation surrounding it, and was directed backward in such a manner as to form a curve of about ninety degrees. This incision was nine lines in length by about one line and a half in depth; next, by the aid of a pair of forceps, the operator raised up a flap from the vesico-vaginal septum, which flap corresponded with the incision already described; this part of the operation lasted about twenty minutes, the state of the patient being such as to require several intervals of repose. The second part of the operation consisted in forming an anterior flap in the same manner, and of the same form as the last, with the exception that the convex portion, instead of being directed backwards, was directed in front. To effect this, the patient was placed on the abdomen, the legs extended and separated, and the pelvis approached to the edge of the table; this portion of the operation was more difficult than the last, on account of the extreme weakness of the patient, and the extravasation of blood into the vagina, caused by the division of a small

arterial branch. The second flap being formed, twenty minutes repose was allowed to the patient, which time was employed in stopping the hæmorrhage. This being effected, Dr. Martin next proceeded to unite the flaps. To do this, the branches of the speculum were again introduced, the convex edges of the flaps approximated and united by interrupted sutures. The operation being terminated, the patient was sent back to her bed, and absolute diet with rest and emolient drinks ordered. A silver catheter was introduced into the urethra and permitted to remain for ten days, being only removed occasionally for the purpose of cleaning it. For the first four days succeeding the operation, the patient continued to pass a small quantity of urine by the fistula; this soon ceased entirely, and the opening remained closed until the first of November, when, from an effort caused by scrubbing in the ward, the dribbling re-commenced. It became necessary again to freshen the borders of the fistula with the scalpel, and to re-apply the sutures. Absolute rest was then enjoined, and the patient began to improve again, until the first of February (during which time, as the patient stated to me, she underwent four other unsuccessful operations). When being about to leave the hospital, she was imprudent enough to take too much exercise (?) which brought on once more a slight oozing from the fistula; this was soon checked by the daily application of nitrate of silver, and the patient left the hospital finally cured on the 10th of March, 1854"—to enter my Infirmary in order to undergo another operation on that fistula, of which, as the patient asserted, she had never been cured.

When the patient came under my care, in April, 1858, I found above the neck of the bladder a fistulous track of a tubular form, the opening of which permitted the introduction of the extremity of the index finger. A thick fleshy lobe, the "posterior flap" in Martin's operation, was found covering the mouth of the fistula. On the 9th of April, chloroform was administered to the woman, it being found that she had a very irritable urethra and bladder, so much so that the introduction of a catheter brought on spasm. She bore the administration of the chloroform remarkably well, not showing any symptoms of "syncope." The patient was placed on her knees, her abdomen and chest being supported by pillows. That flap, which had cost so much labor to get there in the previous operation, was entirely cut off, when the fistulous opening leading to the bladder came into full view. After its borders had been freely denuded, it was closed by five silver wire sutures, fastened according to Bozeman's plan. All the wires were passed through the bladder. When the effect of the chloroform began to abate, the patient vomited a great deal, and this vomiting continued during almost all of the two subsequent days. A catheter was applied as usual, and two grains of opium given. The patient complained during the following four days of a great tenderness in the hypogastric region. She remained constipated for nine days, when the sutures were removed. Two of the sutures, after being clipped off between the shot and the plate, were, after removing the plate, found so deeply imbedded in the tissues of the vagina that they could not be found at that time. One of them was extracted about three weeks afterwards; the other remained undiscovered (vide following operation). A complete cure was the result of this operation. The joy of the poor woman, after four years of suffering, being besides previously told by several physicians that her case was a hopeless one, in seeing herself freed from a loathsome disease, is beyond description.

Operation for Stone in the Bladder on the same woman.—In November, 1860, being called upon, I found her suffering a great deal from a "pain in her bladder." Upon an examination, a large stone was discovered. I invited her to my Infirmary, where she was operated upon on the 30th of November. Being entirely under the influence of chloroform, she was placed on the operating table

in the position for lithotomy. The vagina was dilated by two broad, blunted hooks. A stone-sound, grooved on the outside of the curve, was introduced into the bladder, and pushed toward the anterior wall of the vagina, against a gorgeret, which was held in contact with that place in the vagina. In searching for the end of the sound, my finger discovered a piece of a metallic thread, which, when extracted, proved to be that portion of the wire suture which could not be found in the former operation, and which had remained in the tissues for over two years and a half without having caused a fistulous opening. The point of the bistoury, now inserted thirty millimetres from the mouth of the urethra, was thrust through the integuments till it was imbedded in the groove of the director; thence it was pushed in the direction of the uterus. The cut measured 45^{mm} in length. The stone was then removed with the forceps. A severe hæmorrhage took place. The patient suffered again for two days with violent vomiting, from the affects of the chloroform. No bad symptoms followed the operation. The stone, of the shape of a testicle (singular, is it not?) cut in two equal halves, measured on the cut surface 30 by 50^{mm}; its weight was one ounce and 30 grains, and it consisted of mixed phosphates.

Operation for closing Fistula.—The wound was left to itself, in order to observe what nature would accomplish. On the 19th of December, twenty days after the last operation, the wound had narrowed to 20^{mm} in length; but there was very little prospect that nature would accomplish more without assistance. I vivified the borders of the opening, closing it by six silver sutures and a button, in the long axis of the vagina. The edges of the wound were united before bleeding had ceased. The needle was thrust through the whole thickness of the bladder, the lowest stitch comprising, undoubtedly, a portion of the urethra. The patient walked up stairs after the operation and went to bed, where she adjusted the catheter herself, having attained sufficient experience in handling it. No chloroform had this time been administered, and no vomiting was experienced. Eleven days after the operation, the sutures were removed; but, after clipping off the shot over the silver plate, and raising the latter, the suture which comprised the urethra was found so imbedded in the tissues that it was left behind. About six days later this piece of silver wire was extracted; but it left an opening through which urine escaped occasionally by drops. I cauterized this stitch-hole for several weeks with nitrate of silver, but without any good effect. I then cut out a portion of the surrounding tissue, and applied one silver wire suture, fastened over a small button of lead. When the button and suture were removed, I was not a little annoyed to meet with another failure, though the stitch-hole was so small that, only at long intervals and when the bladder was distended with urine, the latter would escape. I sent the woman home, advising her to touch the fistulous opening occasionally with the nitrate of silver. A month subsequently, on calling to see her, I was informed that she had gone to the country, and that is the last I have heard from her. Has the opening closed? I doubt the affirmative, from the experience I have had with the use of nitrate of silver, which seems to favor only French surgeons.

Remarks.—On discovering the stone, the first idea which struck me in reference to its origin was, that the piece of silver wire suture, which had been lost in my former operation, might possibly have found its way into the bladder, and there given rise to the formation of stone. But when the woman was placed in position for lithotomy, I found that piece of wire, it having by that time worked its way partially out of the tissues; and though extracted at so late a date, it did not leave behind it a fistulous opening. On questioning the patient closely, her statement was, that nearly six months before her delivery, she had already suffered a good

deal from her bladder; and the symptoms she described left no doubt in my mind that she had at that time already been afflicted with stone. It is nevertheless strange that in the many operations she underwent, and the numerous times the catheter was applied, the stone should have escaped detection. I also recollect, that all the symptoms the patient complained of in November, 1860, were present when I examined her for the first time, in April, 1858; but I attributed them at that time to an irritability of the bladder. Stone is mentioned among the causes of vesico-vaginal fistula in parturition, though I never but once heard of such a case. Although of rare occurrence, it will certainly do no harm, and it may be productive of good, to examine the bladder thoroughly before an operation for vesico-vaginal fistula is undertaken. Had I done so, I would have saved the poor woman much suffering and spared myself two subsequent operations. In reference to the cause of the fistulous track, left after the extraction of the silver wire, which had passed through the walls of the urethral canal, I will not venture an explanation. Though the needle had entered both walls to an equal depth, there was only one fistulous opening resulting.

Case VI.—*Vesico-vaginal Fistula*, 25^{mm} *above the external orifice of the urethra; size of a small bean; button suture. Death from purulent infection.*

E. B., a native of Scotland, twenty-four years of age, of a delicate and irritable constitution, who had recently been delivered in this city, was operated upon by me at the Infirmary, on the 7th of June, 1859. Chloroform was administered, the effect of which lasted over three hours, during which the patient was literally bathed in perspiration, but felt well when coming out from under the influence of the anæsthetic. The edges of the small fistula, when pared off, bled profusely, rendering the use of ice necessary for several hours, in order to arrest the hæmorrhage. The fistula was closed by three silver wire sutures, inserted by Bozeman's method. The patient being very delicate, I but naturally treated her with all the consideration that the circumstances admitted, doing or omitting nothing which might interfere with the success of the operation; and in this connection may be mentioned, that particular care was taken, in this case, to apply the sutures in such a manner as to avoid wounding the mucous coat of the bladder. On the night of the 10th, menstruation took place and became profuse; during the next day fever set in, the pulse rising to 140 and beating but feebly, while the skin was hot and dry. On the 12th, the catamenial discharge was still profuse, accompanied by great thirst and restlessness. 13th, pulse 160, cheeks reddened, profuse perspiration, and vomiting of bilious matter. 14th, pulse threadlike, eyes glassy, tongue clear and red; delirium and subsultus tendinum. On the 15th, the patient died. A post mortem examination was not permitted by her friends.

Remarks.—This was a case in which all the circumstances were apparently favorable for a speedy cure. The fistula was small, and there was an extensive field to operate upon. I am positive, that in this case the bladder was not touched, either by knife or needle, though I do not lay much stress upon this fact, having learned to consider needle wounds of that organ as of not much importance. Dr. J. Baker Brown, of London, has reported a similar case, where death resulted from pyæmia, after the operation, in a newly delivered woman, with milk still in her breast. That circumstance may deserve attention.

Case VII.—*Vesico-vaginal Fistula at the trigonum vesicale; transverse diameter* 40^{mm}; *longitudinal* 15^{mm}; *prolapsus of the inverted bladder; one operation. Cure.*

A. K., twenty-six years old, a native of Ireland, living at Algiers, parish of Orleans, was taken with labor pains on the 7th of December, 1857, at 10 o'clock, P. M., and deliv-

ered instrumentally of a dead child on the 9th, at 5 P. M. During her delivery, she stated that she felt such acute pain in her left ankle, that she thought the doctor had fractured it. For ten weeks after her delivery she could not walk, and since then has constantly complained of pain in that part; it being more painful in rainy weather than at other times. She further stated that at times her foot became so cold as to render artificial heat necessary. In July, 1858, she went to a private hospital in this city, where she was operated upon. She remained at the hospital one month, but came home without being benefitted. On the 10th of May, 1859, she entered my Infirmary, being much reduced in health, and so feeble that she could hardly "keep on her feet." On the 18th of May, she was brought under the influence of chloroform. The callous and expanded edges of the fistula rendered it necessary to make lateral incisions. Much bleeding took place, which retarded the progress of the operation considerably. The edges, released by the lateral incisions, were pared off and united by seven silver sutures and a button. In order to secure a firm union of the edges, and collect more facts, in order to prove beyond doubt the innoxiousness of the metallic sutures, all of the sutures were passed through the whole thickness of the bladder. Two grains of opium were given. The patient did not sleep during the night, and had an evacuation the next day. On the 20th, five days after the operation, an injection of water into the bladder, followed by a leaking from under the button, proved that perfect union had not yet taken place. Four days later, when the injection was repeated, no water escaped by the vagina. The sutures were removed on the twelfth day, the fistula being cured. Three days later, the patient was allowed to leave her bed.

On the 7th of June, she observed urine coming from the vagina. An examination revealed a small fistulous opening situated in one of the lateral incisions, which undoubtedly had been made too deep. This fistula was closed by two interrupted sutures, after the surrounding membrane had been erased by the *rugine*. The woman was discharged from the Infirmary perfectly cured, and about nine months later, when I saw her again, she had so much changed in appearance that I did not recognize her features until she told me who she was.

Remarks.—This patient, since her delivery, had not menstruated for over a year, though three days in every month she complained of great pain in the hypogastric region. She is now, four years after the operation, perfectly regular in her menstruation. She has not conceived again. In curing this fistula, the lateral incisions were undoubtedly of much value, but care is necessary to avoid cutting too deep. Notwithstanding the penetration of the bladder by the needle fourteen times, no new fistula or any other bad result followed. The leaking of the fistula on the fifth day cautions us not to remove the sutures too early. Opium did not check the bowels, and no bad effect followed their evacuation.

Case VIII.—*Vesico-vaginal Fistula, including the neck of the bladder; transverse diameter* 50^{mm}; *longitudinal diameter* 20^{mm}; *prolapsus of the inverted bladder; loss of perineum; twelve silver wire sutures applied in three separate operations; each operation successful.*

N. D., a native of Tipperary, Ireland, age unknown, said that she came from a country where it was not customary to keep the record of a woman's age. She was married in July, 1856, at Algiers, parish of Orleans, La.; became pregnant, but miscarried four months afterwards. Two months later was again gravid, and this time carried the fœtus to full term. The labor pains began on the 16th of December, 1857, at 3 o'clock, A. M., and she was delivered with the forceps on the 19th, at 2 o'clock, A. M. During the two days immediately succeeding delivery, she did not urinate, when "the water came away all at once," and in such a quantity that her

bed "became overflowed." She thought that her bladder had burst. She further stated, that sometimes, for a day or two, the urine came only by drops, and that at such times she felt a burning pain, as if caused by a hot iron, and that the pain left her as soon as the urine began to flow freely. For twelve months after her delivery she could neither stand nor walk. She further stated, that as soon as she became able to walk, she went to a "doctor," who told her that she was suffering from a falling of the womb (mistaking probably the prolapsing bladder for the uterus), and that the doctor had given her some medicine for it. She received no better treatment at the hands of another Æsculapius, who promised her to bring back her "courses," saying that after this she would be entirely relieved. After her friend (mentioned in Case VII) had been cured, she applied to me to "put her through the operation." The preceding case had made on my mind a deep impression, but the condition of this unhappy woman impressed on me still more forcibly the amount of suffering and pain that human flesh is heir to. The protruding and everted bladder, in a high state of hyperæmia, bleeding at the least touch, covered the entrance of the vagina, resembling an orange in shape and size. The perineum was gone. The labia majora, nates and inner side of the thighs were excoriated, the pudendal hair being incrustated with urinary deposits. A more pitiable picture than this woman presented, could hardly be imagined. After the bladder was pushed back, four fingers could be inserted into the fistulous opening. No traces of the uterus could be found, the vagina ending in a *cul de sac*, having a small opening in one corner, which probably communicated with the uterus. The rent in the vagina stood wide open, its edges being callous, and on the right side closely attached to the ramus ischii. Adhering still to the use of the button suture, I resolved to try to accomplish the obliteration of the greater portion of the fistula, leaving the closing of the two corners for subsequent operations.

On the 23d of August, 1859, the patient was brought under the influence of chloroform; and after having made, as in the preceding case, two lateral incisions, the edges were properly pared off and united by seven sutures, fastened over a silver button. All of the sutures were carried through the whole thickness of the bladder. A profuse bleeding which took place, was arrested by tying the sutures. No accident worth mentioning happened. Eight days afterwards, on the 13th of August, the plate and sutures were removed, and the fistula, as far as brought under treatment, was found to be perfectly closed, presenting a linear cicatrix. The patient was retained in bed with the catheter in the bladder for five subsequent days, and during that time no urine escaped through the remaining portions of the fistula.

On the 9th of September, the speculum was introduced into the vagina, and water injected by the urethra, when it was observed to come out on both ends of the united edges of the fistula. The edges of the opening to the right were now pared off with the *rugine*, being found to be very thin, adhering to the ramus ischii closely, and being immovable; they were detached from the bone by subcutaneous dissection, after which they were united by three interrupted twisted sutures. On the following day the patient complained of pain in the abdomen, and was troubled with suppression of urine, lasting from 4 P. M. till 10 o'clock next morning. During this time no urine passed through the catheter; of this complaint the patient had suffered occasionally ever since her delivery. Though no opium had been given her, she remained constipated over nine days, when the bowels were evacuated by water injections into the rectum.

The sutures were removed on the 16th. The fistulous opening being closed, the patient was allowed to leave her bed. On the night of the 18th, there was a renewed attack

of suppression of urine, accompanied with the same pain in her abdomen. On the 28th, she was ordered to bed again, to have the remaining opening operated upon. This opening was of the size of a small bean, and was closed by two interrupted sutures. At night the catheter became obstructed, and urine collected in the bladder, causing the patient great uneasiness. At 5 o'clock in the morning I was called by the nurse. In removing the catheter and introducing another one, a great quantity of urine came away, a proof that the opening into the vagina was properly secured. Seven days later the sutures were removed, and I observed to my satisfaction, and not less to that of the sufferer, that the cure was complete.

One year later, I was informed by Dr. Hassenburg, who was practising at that time at Algiers, La., that he had removed from the urethra several stones (gravel). This fact explains the suppression of urine from which the patient suffered so much at different periods, when the stones were passing through the ureter.

Remarks.—This case again proves the value of lateral incisions, without which the edges of the wounds could not have been brought in proper co-aptation. The subcutaneous dissection of parts of the fistulous borders from their close attachment to the bone, greatly contributed to the final success of the operation; and the results, following the penetration of the bladder by the needle and wire, do not corroborate the apprehensions of those who still consider the bladder as a "*noli me tangere.*" The obliteration of the fistula might probably have been accomplished at one operation, by the exclusive use of the interrupted suture. No opium was given, yet the bowels remained constipated, until relieved on the ninth day.

Case IX.— *Vesico-vaginal Fistula near the neck of the bladder; transverse diameter* 8^{mm}; *one operation. Cure.*

Kitty, a stout negro woman, between twenty and twenty-five years of age, slave of M. L. M., of Natchez, Miss., was brought under my professional care in the early part of December, 1859. She had been delivered of her first child three years previous to that time, after having been in labor four days. She had been attended by an old colored woman, who delivered her of a dead child. Three days after delivery a fistula became established; and although the urine constantly came away from her through the fistula, she became pregnant again and bore a second child in August, 1859 (vide Case III); this child was born alive. The patient was operated upon Dec. 15th; all of the sutures were passed through the walls of the bladder. The bleeding which ensued from vivifying the borders was unusually profuse, and not being arrested by the application of ice and compression, the edges were united. The bleeding continued in a small degree during several hours, causing me to doubt whether the sutures were sufficiently tightened. No chloroform had been administered, and the patient did not complain of pain from the operation. The patient left the operating table and walked up stairs to her room. After the application of the catheter, no urine whatever escaped but through the catheter.

On the sixth day after the operation, I introduced the speculum and injected water into the bladder, when a slight leakage ensued from under the button. The patient was kept in bed six days longer, when the injection being repeated, and no fluid escaping from the former place, the sutures were removed. She was discharged from the Infirmary fourteen days later, perfectly cured.

Remarks.—This case again cautions us against removing the sutures too early. Six days after the operation no complete union had taken place. The history of this case does also not speak in favor of the opinion, that sterility was a necessary consequence of such a fistula, "because the urine would destroy the spermatozoa." (Vide Case III.)

Case X. — *Urethro-vesico-vaginal Fistula of an enormous extent; partial obliteration of the urethra; one operation. Death from pulmonary consumption.*

Betsy, colored, sixteen years old, a slave of C. M., of this city, was admitted to the Infirmary in February, 1860. She had been confined two years previously, when living in the country. The labor pain had lasted seven days, and she had been delivered by a doctor, who attended her during the last three days of her confinement. According to the patient's statement, no instruments were used, and the fistula occurred before delivery was accomplished. Upon examination, the whole vesico-vaginal septum, including the neck of the bladder, was found destroyed; of the urethral canal, only 1^{cm} was left. Through this wide chasm the remaining portion of the bladder protruded. The inner end of the urethra was obliterated and closely adherent to the os pubis. The labia majora were thickly covered with condylomas; the pudendal hair incrustated with urinary deposits; the nates and inner parts of thighs denuded of epithelium and covered with ulcers; the inverted and protruding bladder, in a high state of hyperæmia; the action of both ureters, ejaculating the urine in small streams to a considerable distance, occasionally as far as 18^{cm}, and at intervals of from ten to twelve seconds, was a phenomenon of great interest to all present. The vagina ended in a *cul de sac*, communicating through a narrow opening with the uterus, and by which the menstrual blood came away at the regular periods. Though a desperate case, yet, encouraged by the success I had so far met with in former operations, I did not despair of being able to overcome all the obstacles here presented. The first step rendered necessary, was to obtain a permeable urethra. In order to effect this, a *trocar* was introduced in the orifice of the urethra and the obliterated portion of it perforated. A catheter was then permanently lodged in the canal. A large silver cylinder, constructed for the purpose, was then introduced through the fistulous opening, to retain the bladder in its normal place. This cylinder was made to fit the opening of the fistula accurately, so that no urine escaped but through the catheter. The consequence of this was, that all the sores began to heal rapidly, further contact with the urine being prevented. Four weeks later, when the cylinder was removed, the bladder remained in its place.

On the 15th of March, the patient was operated upon. The lower portion of the vagina was extensively detached from the os pubis, in order to gain sufficient movable material, to bring the edges in co-aptation. After having pared the borders, the wound was closed, without difficulty, by eight silver sutures and a button. The bleeding was considerable.

Twelve days afterwards, on removing the sutures, the fistula was found closed, with the exception of a small opening of the size of a five cent piece, to the left of the urethra, where the thin tissues had sloughed away. Three days after the operation, the patient began to suffer nightly fevers, with profuse perspiration, accompanied by a severe cough, and soon copious expectoration took place. In the course of time, vomicas became established in both lungs. All medication proved nugatory, and the patient became reduced lower and lower, till only a skeleton remained. She expired on the 15th of December, nine months after the operation.

Remarks.—Here we have a large fistula accompanied by a regular catamenial discharge, the co-existence of which is denied by some writers on the subject. The action of both ureters was in full view, a phenomenon most assuredly seldom witnessed. The distance to which the urine was expelled by the ureters, may give an idea of the powerful action of their muscles, and in their peristaltic contraction the main force is undoubtedly to be found, by which stones formed in the kidney are driven through the small lumen of the ureter; this also gives us the

key to the excruciating pain experienced by those who suffer from such a disease. The alternate contraction of the ureters further prove, that the excitation of their respective nerves must originate in distinct and separate localities. The death of the patient, though protracted during nine months, I have no hesitation to attribute to the operation; an embolic process localized in the lungs, ending in their slow but utter destruction.

Case XI.—*Urethro-vesico-vaginal Fistula; transverse diameter* 15^{mm}; *longitudinal* 30^{mm}; *partial obliteration of the urethra; two operations. Cure.*

Rosalia, mulatto woman, about thirty years old, slave of L. D., of Pointe Coupee, La., was admitted into the Infirmary in August, 1860. She had previously given birth to two children. At the third parturition, her labor pains lasted four days, during which time she was attended by a colored woman. The urine passed through the vagina on the third day after delivery. The lower margin of the fistula was at a distance of nearly 20^{mm} from the external orifice of the urethra. Introducing a catheter into the urethra, the latter was found to be permeable 14^{mm} in length, when it became obliterated, and closely adhering to the os pubis. By the most careful and precise scrutiny on the part of all the medical gentlemen present, no traces of the uterus or of any orifice leading to it could be found. The vagina ended in a *cul de sac.*

On the 31st of August, 1860, the patient was placed on the operating table, and chloroform administered. The obliterated portion of the urethra was first opened with a trocar, after which a catheter was adjusted. In paring the edges of the fistula, a part of its lower margin, which was adhering to the os pubis, had to be detached from the bone, to make it movable, and to bring it in contact with the opposite edge, in an anterio-posterior position. To accomplish this, a lateral incision was also necessary. As the thin tissues covering the inner end of the urethral canal could not afford much loss of substance, they were only superficially scarified and covered by bringing down the upper border, so that the artificial opening, made in the urethra, became located inside the bladder. The edges of the wound were then, in that position, closed by six silver sutures and a button. Twelve days later, the sutures were removed. The fistula was found to be obliterated, with the exception of a small opening to the left of the urethra. This was operated upon two days later, and permanently closed with two interrupted silver sutures. The patient remained at the Infirmary until the 3d of November, when she was discharged cured. After a lapse of five months, she returned, complaining of a leaking from the vagina. Upon an examination, a small opening was detected, where the lateral incision had been made. On April 11th, an oval piece was excised, having the fistulous opening in its centre, and the wound was then closed by two interrupted sutures. Eight days later, when the sutures were removed, the fistula had disappeared, and the patient was sent home one month afterwards, permanently cured.

Remarks.—Although the largest diameter of the fistula was situated in the long axis of the vagina, still the complication which the case presented in the obliteration of the urethra, made it imperative on me to unite the edges in an anterio-posterior position. The complication mentioned required the greatest exactness, and also a delicate handling of the thin tissues covering the urethra, in order to bring them in proper apposition with the posterior margin of the fistula, so that the artificial opening made in the urethra became located inside the bladder. I appreciate the success more highly, as the operation, though otherwise successful, would, without this point being secured, have been of little benefit to the patient.

Case XII.—*Vesico-vaginal Fistula near the neck of the uterus, measuring in its long axis* 15^{mm}. *Cure effected by the third operation.*

Mathilda, slave of F. D. C., of Holmesville,

La., was admitted to the Infirmary in December, 1860. She was between thirty and thirty-five years old, and had given birth to ten children, all born at the full term. About one year previous to her admission, she was delivered, after having been in labor pains four days. No instruments were used. After the birth of the child, which was born in head presentation, the patient suffered a great deal from pain in her lower extremities as well as her back, so much so, that she could not bear to be touched. Her legs and feet were swollen, and remained in that condition about four weeks. She had not been able to walk for two months, immediately preceding my knowledge of the case. Soon after her delivery, she felt the urine coming from her "the wrong way."

She was operated upon on the 17th December. The greater part of the fistula was situated to the right of the neck of the uterus and about four millimetres distant from it. The longest diameter of the fistula lay in an oblique and downward direction. An immovable portion of the mucous membrane of the bladder, protruding through the fistula, had to be removed by the knife, before the borders of the fistula could be properly pared. The opening was closed in a longitudinal direction, by five silver sutures, adjusted over a button. Considerable bleeding occurred from vivifying the borders, which was arrested by tying the sutures. The patient had some fever in the evening, which disappeared the next morning. No chloroform had been administered. On the sixth and eleventh days after the operation, water was injected into the bladder, but each time was observed to come out from under the button. Thinking it of no use to keep the patient any longer confined to her bed, the sutures were removed. Although the greater part of the fistula was closed, it still showed an opening of the size of a pea. Another operation was performed on the 16th of January. This time the edges of the wound were united in a transverse direction, by two sutures and the button. Five days later the catamenial discharge appeared. On the tenth day after the operation the sutures were removed, but the fistula was not obliterated. The patient was then sent home, with directions to return in a couple of months. Re-admitted to the Infirmary, she was operated upon on the 12th day of April. The fistula had not diminished in size. Attributing the want of success, in the first two operations to the insufficient denudation of the edges, or in other words to a carelessness, which we are too apt to lapse into under certain circumstances, the edges were this time pared off to a greater extent and united by three interrupted silver sutures, two of which were carried through the bladder and a portion of the neck of the uterus. Ten days later the sutures were removed, the fistula was perfectly closed, and when discharged on the 27th of May, the patient was considered perfectly cured.

Case XIV.—*Urethro-recto-vesico-vaginal Fistula, with total destruction of urethra; both fistulas successfully operated upon, with re-establishment of an urethra.*

In the winter of 1862, when I was visiting Surgeon of the Charity Hospital in this city, my attention was called by the nurse of the lying-in ward to an unfortunate inmate, who had for six years walked the rooms of that institution, in a most wretched condition. Unsuccessfully operated upon several times by different surgeons, she had been given up as incurable. Her history was the same as in most of these cases which happen amongst the poorer classes, viz: protracted labor, without proper and timely assistance. She had been in labor with her first child over four days; in her delivery no instruments were used, and the fistula had become established soon afterwards. When her clothes, saturated with urine, were lifted up, the picture which presented itself was indeed heart-rending. The thighs, nates, and labia majora were excoriated and covered with a pustulous eruption; the entrance of the

vagina closed by the inverted bladder, with its mucous membrane in a high state of hyperæmia. The bladder was incarcerated in the fistulous opening; after its reduction, which caused considerable pain to the patient, the lever speculum was applied, but here a still more desperate condition was found to exist. With a chasm in the vesico-vaginal septum, measuring in its transverse diameter 40^{mm}, its lower borders immovable, adhering to the os pubis, the vagina was much shortened, and communicated by another fistula with the rectum; the whole urethral canal was gone, only traces of it remaining; and yet I was expected to give relief, because the patient had been told, that I had cured a friend of hers, who had not failed to describe her own case as even worse than this one. An occlusion of the vagina could not be thought of, on account of the absence of an urethra, and this very circumstance did not give encouragement for a trial of obliteration of the fistula, by our method. In such a dilemma, I ordered the patient to bed, in order to attend first to the excoriation of the external parts, and to gain time to decide what further steps could be taken in this extremity. I placed a large cylinder, perforated with many holes, in the bladder, to retain it in a normal position, and at the same time to provide a proper channel for the passage of the urine, to prevent it from coming in contact with the excoriated parts. While the sores were healing, I came to the conclusion to try first the obliteration of the fistula, and if successful, to build up out of the ruins another urethra.

On the 8th of December, I administered chloroform to the patient, and pared off the edges of the fistula; but to obtain an approximation of the vivified borders, it was necessary to dissect the adhesion of the lower margin of the fistula from the os pubis, besides making a lateral incision to the right of the fistulous opening. After this had been done, the edges could be brought in contact without any tension of the parts. By the application of nine interupted silver wire sutures, the fistulous opening was closed, notwithstanding the disrespectful action of her rectum, in opening a "battery" from the rectal fistula, by which my instruments as well as the parts operated upon were kept continually under fire. In the centre of the united borders I had left a small opening through which a catheter of two millimetres diameter was introduced and retained. A large dose of opium was given to keep the bowels confined. During the rest of the day and subsequent night the patient suffered much from vomiting, causing a bearing down of the bowels, which made me fear for the safety of the operation; but the nausea passed off without doing any injury. No urine escaped except through the catheter. The bladder was frequently injected with cold water during the several subsequent days.

On the fourth day after the operation, the patient discharged from her bowels hard fæcal matter, accompanied with such a bearing down of the bowels, that the catheter was ejected from the bladder. Still no injury to the sutures happened. A dose of oleum ricini was then given. Fourteen days after the operation six of the sutures were removed, the rest of them in the third week. No cutting out of the wire or establishment of a new fistulous opening had taken place, although almost all of the sutures were carried through the whole thickness of the bladder. The fistula was perfectly obliterated. In removing the catheter, the opening leading into the bladder was filled up by a small reddish-looking tumor—a portion of the mucous membrane of that organ, which acted like a stopper. The patient, when in a sitting posture, could hold her urine for twenty minutes, and in a recumbent position, several hours.

On the 26th of January, the recto-vaginal fistula was closed by six twisted silver sutures, which, when removed six days later, had also effected a cure. Having so far been successful, I contemplated the re-establish-

ment of an urethra, and in order to have the patient more fully under my personal control, I removed her to my residence. The remains of the former urethra had formed two thick ridges, measuring nearly one centimetre in length. These ridges I pared off, and then made a lateral incision on each side, to gain more mobility. A union was then obtained by bringing them together over a small catheter, of very thin silver plate. The silver wire used was likewise of a very small calibre. The upper end of this so constituted tube was then properly vivified, as also the orifice leading to the bladder, and both united by interrupted silver sutures. This operation was performed to the satisfaction of the medical men present, and the result surpassed my own expectation. After the removal of the sutures, on the third day, the new canal was established in its entire length. At the point where the urethral canal had been attached to the orifice leading into the bladder, a small opening remained, the wire having cut through the thin membrane. Using nitrate of silver to narrow the opening, it became larger instead of smaller. I therefore desisted from further meddling with it, intending at some other time to attempt to close it. What was my surprise when, a couple of weeks afterwards, on being called to her room, I found the whole urethral canal gone, and over this a rent in the vagina, in which a portion of the bladder was incarcerated, and so painful to the touch, that I had to give chloroform to the patient, in order to reduce it.

The thing was a mystery to me. How could it have happened? A fortnight afterward I operated again to close the fistula; and though I succeeded, success was accomplished but with the relinquishment of the hope of ever being able to re-establish another urethra.

About three weeks afterwards I was again called to her bedside, to find a new edition of the fistula so lately cured, and another incarceration of the bladder. This time I was resolved to get at the bottom of the mischief. I told her that I would not relieve her, unless she made a confession how it had happened. My suspicion, which had lately been aroused that an intimacy existed between her and my groom, was proved to be correct, and the cause of the several injuries thereby revealed. The amiable couple went off together and have since been joined in wedlock, and I wish them both the happiness few, I suppose, would like to participate in; yet *de gustibus non est disputandum.*

Case XV.—*Vesico-vaginal Fistula; transverse diameter* 20^{mm}; *longitudinal* 35^{mm}; *one operation; cure. Absence of vaginal portion of uterus; subsequent menstruation through the urethra.*

B. D., a native of Ireland, aged twenty-six, had been married three years, when, in September, 1861, she was confined for the first time. Having been five days in labor, she was delivered by instruments of a dead fœtus. Five days after delivery she observed urine coming from the vagina. When examined, no traces of a uterus could be found, the vagina ending in a *cul de sac.*

On the 23d of June, 1862, the patient was operated upon. The edges vivified were united by seven silver wire sutures—anterio-posteriorly. At the request of my friend, Dr. Sternburg, U. S. A., who was desirous to see the mode of application of Bozeman's button-suture, the latter method was used.

Two days after the operation, patient complained of pain in her abdomen and back, and on the subsequent days urine, highly colored with blood, was discharged by the catheter

On the 2d of July, the sutures were removed; the fistula had disappeared, and the woman was discharged a week later, cured. On the day of her discharge, she could hold the urine four hours, passing it in a full stream. I saw her lately, three years after the operation, and she stated to me that for nearly twelve months subsequent to her cure,

she had suffered from three to four days monthly an intolerable pain in her back, which she described as resembling labor pains; then her menses re-appeared and the pains left her. She now menstruates regularly, the blood coming away through the urethra without causing her any inconvenience.

Case XVI.—*Vesico-vaginal Fistula; transverse diameter* 45^{mm}; *longitudinal* 20^{mm}. *The fistula cured by eleven silver wire sutures in one operation.*

A. S., a native of Speyer, Germany, thirty-eight years old, mother of two children, complained of labor pains on the morning of the 7th of September, 1864. At 10 A. M., next day, the membranes ruptured, and from that time to 10 P. M., labor pain continued with hardly any intermission. No apparent progress having been made, a doctor was sent for, who delivered her with the forceps, at 11 A. M. of the next day, of a dead fœtus. The patient, while in the lying-in state, was permitted to retain her urine for three successive days; when she passed her water, "it filled a large water-pot," the patient thinking "it would never stop." Two hours from that time she observed that the sheets under her were wet, and became conscious that the urine came through the vagina. The urine ceased to be discharged by the natural outlet. When examined, the entrance of the vagina was found to be occupied by the inverted bladder, protruding beyond the labia majora. Here the same phenomenon respecting the action of the ureters, as described in Case X, was observed. The mucous membrane of the bladder was in a high state of hyperæmia. After the bladder had been reduced, three fingers could without difficulty enter the fistula. At the fundus of the vagina, and to the left, were the rudiments of the neck of the uterus, forming two small fleshy tumors, with an opening between them leading to the cavity of the uterus. The fistula occupied the greater part of the vesico-vaginal septum, extending over the neck of the bladder; the lower border was 25^{mm} from the orifice of the urethra, the upper border running close to and partially beneath the uterine fragments.

On the 13th of February, chloroform was administered, which produced a severe kind of trismus. In order to retain the bladder in its proper position, sponges were introduced through the rent in the bladder—a method I have found useful in such cases, as it obviates the necessity of employing an assistant to keep the bladder depressed during the vivifying of the edges of the fistula, which latter process is also greatly facilitated by it. In denuding the edges of the opening, considerable bleeding happened. The fistula was closed by eleven twisted silver wire sutures. On account of a portion of the upper border of the fistula, lying beneath the uterine fragments, I was obliged to insert two sutures through it, but on attempting to twist them they cut through the tissues. By inserting the needle higher up, so as to include a larger portion of the bladder in the sutures, this was rectified. The catheter was then applied, and kept in the bladder for the following ten days. Cold water was injected into the bladder every half hour during two days subsequent to the operation. Though opium had not been given, no alvine evacuations took place during the patient's confinement in bed.

On the tenth day, the sutures were removed, when a complete and firm obliteration of the fistula was found to have taken place. Two days later the patient was allowed to leave her bed. Sitting on a chair, she could retain her urine for an hour, when she discharged from three to four ounces, through the urethra. A month afterwards I had occasion to examine her again, when I could hardly detect the cicatrix. She was able to hold her urine nearly two hours, although not so long when in a recumbent position. Laying on her back caused the mouth of the urethra to gape.

Case XVII.—*Vesico-vaginal Fistula; transverse diameter* 20mm; *longitudinal* 5mm; *cured in one operation, dispensing with after-treatment.*

A. D., a native of Germany, thirty-eight years old, a primipara, was confined with child on the 17th of March, 1865. Her labor being very tedious, a physician was sent for. Failing to deliver her with the forceps, I was summoned to her assistance. When I arrived I found the patient nearly exhausted, complaining of extreme thirst, and suffering greatly. Her abdomen was much distended; pulse frequent and feeble. Finding that the woman had an unusually contracted pelvis, and that the fœtus was in all probability dead, I did not hesitate in applying the cephalotribe, previously administering chloroform. A profuse hæmorrhage ensued after delivery. The uterus did not contract. Ice was, therefore, applied to the abdomen, and ergot given internally. The patient vomited a good deal during the day; the pulse in the evening one hundred and sixty and small. The application of ice was continued during the night, being also given by the mouth. The next day the patient suffered much from hiccough; pulse in the evening seventy-five, and more full; great tenderness of the abdomen; the uterus more contracted. Ice was continued till the next day. The patient recovered gradually, but not without the formation of a vesico-vaginal fistula. I operated upon this fistula three months subsequently. The patient living in very humble circumstances, submitted to the operation only upon the condition that I would not confine her to bed, as she had to attend to the wants of her household. I told her that I would not vouch for the result, but she insisting upon it, I acceded to her request. The fistula was closed by five interrupted silver wire sutures; no catheter was applied; no water injections made—she attending to her work as usual. I visited her every day. She passed urine frequently, but none came away but by the natural outlet. Ten days afterwards, when I removed the sutures, the fistula was obliterated, and has remained so.

TWO CASES OF OBLITERATION OF THE VAGINA.

Case IV.—*Vesico-urethro-vaginal Fistula; introitus vaginæ nearly obliterated; operation for total occlusion of the vaginal entrance; success; menstruation through the urethra.*

F. M., thirty-four years old, the wife of a poor emigrant, arrived here in the month of June, 1858. Fourteen days after arrival she was for the first time confined in labor. Not having the means to employ either a doctor or a midwife, a female friend of hers volunteered in the capacity of the latter. She had been nearly four days in labor before delivery of a dead child took place. The child was born in breech presentation. The urine had come away from the vagina since the birth of the child. She had experienced a great deal of pain after delivery.

In examining the parts, I found the entrance of the vagina nearly closed. Towards the perinium was a semi-lunar opening of 20mm in length, gaping at the middle of the fissure to an extent of four millimetres. A male catheter, introduced into the urethra, could be brought out through that opening. The examination further revealed a large destruction. The greater part of the vesico-vaginal septum, as also a portion of the urethra, had been destroyed. Under those circumstances, I thought I should be justified in making the proposition, to finish what nature had already nearly accomplished, the entire occlusion of the vaginal entrance.

I did not meet with any serious objection to this course from either the patient or her husband.

On the 14th of August, the bowels having been evacuated the day previous, the edges of the rent were pared off to the extent of 5mm. The abrasion was made with the utmost care in order to preserve as much of the thickness of the edges as possible. In-

troducing the left index finger into the rectum, I made an incision through the tissue between the vagina and rectum to the depth of 15^{mm}, and of a corresponding length with the fissure, taking every precaution not to injure the rectum. This was done partly to make the posterior portion of the fissure more movable, and partly to prevent any injurious action of the sphincter and levator ani muscles on the edges, when united. In the cut so made I introduced a thin plate of lead, to prevent too early an union of the parts divided. The fissures was then closed by five interupted silver sutures. A catheter was placed in the urethra and retained for ten days, when, after the removal of the sutures, the fissure was found to be entirely closed. The plate of lead was then removed and the wound allowed to heal. The patient having lost her husband from yellow fever, went to Cincinnati to live with a sister. In February, 1859, I received a letter from her, wherein she stated that she regularly menstruated—that the blood passed through the urethra, and that she did not experience any inconvenience from it.

There is a case of occlusion of the vagina from parturition reported by Dr. T. G. Richardson, in the *New Orleans Medical and Surgical Journal*, March, 1861, a part of which I will copy: "Sarah. aged 20, a mulattress, the property of Mr. D. of this city, admitted in Stone's Infirmary, November 29th, 1859, was confined twelve months previously, when, from some cause or other, it became necessary to remove the child by cephalotomy. Inflamation and sloughing of the interior of the vagina followed upon the operation, and the result was complete closure of the canal. Upon examination, I found the closure to begin immediately behind the lesser labia, the parts being here drawn closely together to form a small puckered cicatrix not more than a third of an inch in diameter. There was evidently an accumulation of menstrual fluid in the uterus, the tumor being clearly distinguished above the pubis and distinctly felt by the finger inserted into the rectum. By the latter procedure, aided by a catheter in the bladder, I also ascertained that the occlusion occupied nearly or quite the whole length of the vagina, as the tumor formed by the accumulated fluid descended into the pelvis but little lower than the normal situation of the os tincæ, and below this point the finger and the catheter were separated by a septum of firm tissue, judged to be not more than half an inch in thickness." It may be stated here, though not pertinent to our purpose, that Dr. Richardson established a permanent opening of the vagina.

This case is the more remarkable, as by the extensive "sloughing of the interior of the vagina," neither a recto nor vesico-vaginal fistula was established. Is it not singular that the operation to procure an artificial obliteration of the vagina should in general be so unsuccessful?

Dr. G. Simon, in Darmstadt, Germany, has tried a new method to obliterate the vagina, to which operation he has given the name of "*Cross-Obliteration of the Vagina.*" This method consists in bringing the remains of the vesico-vaginal wall into union with the recto vaginal wall in a *transverse direction.* Simon recomends this operation in cases where the fistulous openings are so large that they cannot be closed by sutures. A necessary condition for the successful employment of this method consists in the urethra remaining, so that the upper part of it can be freshened for a space of from two to three centimetres. On the same level with the excision of the mucous membrane of that organ, a similar portion is cut out in a circle from the sides and posterior wall of the vagina. The apposition of the wound is effected by six or seven strong silk sutures. Simon thinks that his method posesses great advantages over the operation of episiorraphy and transplantation; that it promises greater certainty in healing, being free from danger, prevents incontinence of the urine,

preserves a portion of the vagina, and exerts no bad influence afterwards

He has performed this operation in six cases (the first case is reported in *Deutche Klinik* of 1856, and was performed in May, 1855). Though he was not successful in obtaining a perfect cure, yet he met with so much success as that only a very small fistula remained. (But the smallest fistula remaining of course renders the effect of the operation nugatory.)

This method has also been tried by Dr. Roser, in Marburg, with partial success. Dr. Werner, in Giesen, *has cured one case completely.* The patient was discharged from the hospital in August, 1857, six months after the operation.

Another case, though not published yet to my knowledge, is mentioned by Dr. Bozeman. (*New Orleans Medical and Surgical Journal*, for 1860, January number, page 57.) The obliteration in this case was obtained by uniting the posterior with the anterior wall of the vagina just below the vesical extremity of the urethra, and within the meatus urinarius. Dr. Bozeman probably not being aware of Simon's operation, says: "This case occasioned the inauguration of a new and successful plan of treatment, never before adopted that I am aware of," and "the operation can not be regarded otherwise than as a great triumph. It enables us now to manage a class of cases, if not as satisfactorally as we could desire, certainly upon scientific principles, and with results never heretofore attained."

Case XIII.— *Urethro-vesico-vaginal Fistula; destruction of nearly the whole anterior surface of the vagina, including bladder and urethra; the inner opening of the urethra obliterated; Elytro-episiorraphy; success.*

This case occurred in the person of a young negro woman, about sixteen years old, a slave of J. M. P—, of Bayou Sara, La. She was admitted into the Infirmary April 5th, 1861. The entrance of the vagina being very narrow, it was dilated by the introduction of sponges. On the second day after this, the patient complained of great pain in the hypogastric region. The sponges being removed, the vagina was found dilated to a great extent, but was also considerably excoriated, blood exuding from its surface. This was caused by the pressure of the sponges, which had become impregnated with decomposed urine. The speculum revealed not only the magnitude of the destruction, but the impossibility of effecting a cure by our method, from a sheer want of material. All that was left of the anterior wall of the vagina consisted of a space of twenty millimetres, containing the urethral canal, the inner orifice of which was found closed and closely adhering to the symphysis pubis. The occlusion of such an enormous gap by sutures was therefore entirely out of the question.

I was at a loss how to proceed in order to relieve the patient from her misery. The only thing which was clear, was, that she must be relieved in some way or other. A transverse obliteration of the vagina could not be thought of, because the anterior portion of the vagina, with the greater part of the urethra, was gone. Nothing therefore was left but to try the obliteration of the vagina by Episiorraphy—an operation which was first proposed and twice executed by Vidal de Cassis, and by which that surgeon gained nothing but universal condemnation; and why? Because he was unsuccessful. Nevertheless, I resolved to try it, though the history of the operation was but a record of failures. After the patient was brought under the influence of chloroform, the urethra was opened with a trocar and a catheter introduced. The mucous lining of the labia majora was then sufficiently removed, the "dulcedones amoris" or nymphæ cut entirely away, and the introitus vaginæ, to an equal length with the remaining portion of the urethral wall, was vivified circularly. The bleeding which ensued was considerable. After it had subsided, the denuded parts were brought in

contact by the application of seven interrupted silver wire sutures, which were fastened by broad clamps of lead on the outside of the labia majora.

Deeming it of importance, I will give here minutely the *modus operandi:* The woman was placed on her knees, whilst her abdomen, chest and head were supported by pillows. In paring the inner part of the labia majora, removing the nymphæ to a level with the denuded surface of the labia majora, and vivifying a circular part of the entrance of the vagina to an extent of two centimetres, I had obtained a surface which, when agglutinated, would measure from four to five centimetres in depth. Entering now the long flexible needle from outside the lower vivified border of the right labium majus, in a horizontal line with the meatus urinarius, I thrust it in and back through the tissues, till its point came out in the centre of the posterior wall of the urethra, just above the meatus urinarius. A silver wire was then introduced into the eye-hole of the needle and the latter withdrawn, leaving the other end of the wire in the vagina. The needle, freed from the thread, was then inserted again in the left labium majus in a corresponding place with that of the right labium, thrust through the tissues, and brought out at the same point where the wire was hanging out of the urethral wall. This end of the wire was now carried through the eye-hole of the needle. In withdrawing the latter, I had formed a loop which, when tightened, would include a depth of at least four centimetres. Three sutures were in this manner applied, each of them going through the posterior wall of the urethra. The other four sutures were placed at proper distances, reaching on each side above the denuded surface of the vagina. All the sutures were then secured outside the labia majora, over broad leaden clamps, by perforated shot.

In order to test the efficiency of the sewing, a large quantity of water was injected through the catheter. No fluid escaped but by the catheter. The patient had a slight acceleration of the pulse during the night, but did not complain otherwise. No untoward accident happening, the sutures were removed on the fourteenth day after the operation, and the obliteration was found to be accomplished. The woman was kept in bed during the following week, and then the permanent application of the catheter dispensed with, but she was ordered to introduce it every two or three hours. She could retain the urine for that length of time, when in a recumbent position. When first allowed to leave the bed and to walk, I observed to my satisfaction that only a few drops of urine occasionally came away, while at the same time the catheter yielded a quantity of from three to four ounces. The patient remained at the Infirmary until the 11th of July, by which time her condition had not altered in any respect. At her discharge, three months after the operation, a catheter was given her, with the advice to use it several times a day, and not allow the urine to collect in her bladder. I have not heard from her since.

Remarks. — The existence of a sphincter muscle of the urethra has not yet been proved; the contractile fibres contained in the cellular tissue may, by the adjunctive action of Wilson's urethral muscle, prevent the involuntary discharge of urine, even though (as in the present case) a portion of the urethra had been lost.

This is, to my knowledge, the only case on record where the operation of episiorraphy has been crowned with success. It had failed with Vidal de Cassis, Velpeau, Dieffenbach, Berard, Wutzer, Simon, Roser and others. In some of the reported cases, obliteration was obtained, but always with the exception of a small opening, situated in most cases behind the urethra. The only case in which the operation was called "successful," is reported by Massonneuve (*Mémoires de la Société de Chirurgie de Paris, tom. III, p.* 226); but the success was unfortunately proved by a post mortem examina-

tion—the patient having been carried off by phlebitis before the cure was accomplished.—Massonneuve, in his case, obliterated not only the vagina, but also the urethra, and in order to get an outlet for the urine, he tried to establish a recto-vaginal fistula. Being unsuccessful here, he perforated the perinæum with a trocar, intending to apply an obturator afterwards. Pending the accomplishment of this original and curious idea, his patient died from phlebitis.

A. Berard, in 1844, almost succeeded in this operation, "only two small openings being left," but the patient died of peritonitis three weeks afterwards. This case was brought before the Academy of Sciences, and during their deliberations, three more cases were operated upon. The discussion did not result in favor of the operation. The accoucheurs were nearly all opposed to it (as a matter of course). The chief objections urged against it were: 1st, that a perfect obliteration was impossible; 2d, the operation was dangerous; and 3d, that in case the operation should be successful, the patient would be placed in a miserabble condition ever afterwards.

While I do not pretend to assert that the method of cross-obliteration should not be preferred to episiorraphy, whenever the circumstances are favorable for its performance; yet, in a case like the above, it seems to me that no alternative is left, except trying to ameliorate the condition of the patient by the operation of Elytro-episiorraphy.

Résumé.—Of these seventeen cases, the labor-pains lasted from twenty-seven hours to seven days; seven were delivered by instruments; in ten, no instruments were used. The fistulas were established from the time of confinement until eight days after delivery. In thirteen, it occurred in the first labor; in one, at the second; in two, at the third; in one, at the tenth. Three fistulas were caused with the fœtus in breech presentation. The age of the women varied from fourteen to thirty-eight years. Two died—one from pyæmia, the other from phthisis. All the others were cured, two of them by obliterating the vagina.

At the close of the publication of these cases, I feel bound to acknowledge the valuable services of Drs. Choppin, Eiland, Goldmann, Grall (since dead), Kattmann, Lœber, Maas, Schmittle and others, but most so of my friend, Dr. M. A. Dauphin, to whom I feel specially indebted, not only for the endurance and patience with which he assisted me in the majority of the cases here described, but for the skill with which he has executed the accompanying drawings.

C. History of the Operation.

There can not at this day exist a doubt, that the happy results so lately obtained in the treatment of fistulous openings, comprising the bladder, urethra, uterus, rectum, and vagina, are in the main due, 1st, to the manner of obtaining access to them; 2d, to a sufficient denudation of the borders; and 3d, to the proper application of metallic sutures. In the advocacy of these means, American surgeons occupy a very prominent position.

It can not be without interest to compare the results obtained on this continent, with those of other nations. But in looking over their records, it is not my purpose to notice all the abstract propositions, singular manipulations, and curious instruments invented and advocated, as they seem only to demonstrate their own impracticability and to increase the museum of curiosities in the art of healing. So far as the operations for this class of diseases possess an intrinsic value, or represent the standard to which surgery has gradually advanced in the different countries, they will find a place here.

In turning over the leaves of the records

of those nations who claim each to be in advance of the others and the rest of mankind—glorious France, learned Germany, and industrious England—we will be able to judge what they have accomplished towards the cure of vesico-vaginal fistula. Let us look first at the men of great genius in

FRANCE.

Ambrose Paré, 1570, proposed a retinaculum to close vesico-vaginal fistula.

Dessault, 1804, advanced only so far in the treatment as to approximate the edges of the fistula by introducing a large conical plug into the vagina to reduce the fistula to the condition of a transverse cleft, retaining a catheter in the bladder permanently.

Lallemand, 1825, cauterized the edges of the fistula with nitrate of silver, and applied inside the bladder a catheter armed with hooks, which instrument he called "sonde airigne." With these hooks he retained the edges of the fistula in contact. Of 15 cases so treated, 4 were cured, 2 improved, 6 were failures, and 3 died.

Dupuytren invented an instrument similar to that of Lallemand. Besides, he first proposed and used the actual cautery, kept a catheter in the bladder, and is said to have finally cured some cases.

Roux, in 1829, tried the "suture entortillée" with ordinary thread and additional metalic bars, after having pared the edges. One operation took up two hours, and the patient died on the tenth day.

Vidal de Cassis (in his Pathologie Externe), says: "I do not believe that there exists in the science of surgery a well authenticated complete cure of vesico-vaginal fistula, a fistula due to a loss of substance from the bas fond of the bladder.

Nélaton, in 1852, says he has seen some cases getting well without an operation; he is, therefore, in favor of waiting, and in case an operation should be necessary, he says he would try antoplasty or the electric cautery.

Velpeau, in his Operative Surgery, says, "The suture, which must have first suggested itself to the mind, is of such difficult application, that but few practitioners have ventured to make a trial of it; so that scarcely any mention is made of it in the works that have issued from the school of Paris. To abrade the borders of an opening, when we do not know where to grasp them; to shut it up by means of needles or thread, when we have no point apparantly to secure them; to act upon a movable partition placed between two cavities, hidden from our sight, and upon which we can scarcely find any purchase, has appeared to be calculated to have no other result, than to cause unnecessary suffering to the patient.

Job. de Lamballe tried first a plastic operation, naming it "Elytroplasty," in which he borrowed flaps from the labia majora, and nates. After having given up that method, of which Malgaigne, in 1850, said, "This proceeding is at the present time that, which has procured the most numerous and lasting successes." Jobert invented another method, to which he assigned the ponderous name, "Réunion autoplastic par glissement." Jobert being the most successful surgeon in the treatment of vesico-vaginal fistula amongst his countrymen, I will give his method here in an abbreviated form: The patient being placed in the position of lithotomy, the labia majora are pushed outside by assistants, the recto-vaginal portion being depressed by a hook. Then the collum uteri is dragged down by Museux's sharp hooks to a sufficient distance beyond the vulva, to bring the fistula in view. By a cut of the bistoury in a semi-circular form, the vagina is separated from the neck of the uterus to a length of one inch. The edges of the fistula are then denuded, brought in contact and united by double silk threads or small tape carried through vagina and bladder. After a reposition of the parts pulled down, a piece of pyrotechnical sponge is kept in the vagina to absorb the blood, and an elastic catheter introduced into the bladder. After twenty-

four or forty-eight hours, the sponge is removed. On the sixth to the eighth day an inspection is made, the sutures are removed, the catheter is re-applied, and on the twentieth day the patient is "discharged as cured." Jobert reports 16 cases operated upon by this method, out of which 11 were cured, in one the cure was incomplete, in another a failure, and three died.

Malgaigne, in speaking of the application of sutures in this operation, remarks, "It will be seen that this point of surgery requires fresh researches. Paring the edges may be done in longititudinal fissures with scissors. To refresh the edges of transverse fistulas we have only caustics, particularly nitrate of silver, which is proposed by Mr. Lallemand as the general application." Mr. Malgaigne does not forget to sneer at the success of American surgeons in the treatment of that disease, so long the opprobium of surgery.

To judge from a discussion held at the Société de Chirurgie de Paris, September, 1862, in which MM. Daneau, Berard, Verneuil, Mar, Jolin and Depaul participated, it seems that even at this late date, the progress made in France in the treatment of these fistulas consists mainly in the recomendation of the use of the nitrate of silver, ("a remedy as old as the hills") and in keeping a catheter in the bladder; and because some spontaneous cures have been observed, it was thought that even the use of the catheter might be dispensed with. Since the appearance of the two distinguished American surgeons, Bozeman and Sims, in France, these views, I believe, have been partially changed.

GERMANY.

The first operation for vesico-vaginal fistula amongst the German surgeons has reference to a proposition made as far back as 1660, by H. von Roonhuyze, in his Heelkonstege Anmerk: Amsterdam, 1663. Roonhuyze recommends the use of a speculum, paring off the edges of the fistula, and trying union by the first intention by the use of a kind of needle made from the quills of a swan (a proof that he never tried his own proposition). In 1720 we hear from Voelter in Wurtemburg. He recommended the interrupted suture and the use of a catheter; the sutures to be of silk or hemp, and applied with needles and a needle-holder. Of his method he said, "The operation may appear to some to be curious and too delicate. This can not be denied; but I have tried it in a woman of the better classes, though I have failed." From that time all is silent in Germany, until the celebrated obstetrician, Naegele, in Wurtemburg, about the year 1812, brought the matter again before the profession.

Naegele proceeded in the following manner: Placing the patient in the position for lithotomy, he passed a catheter through the urethra into the bladder. He then examined with the index finger the extent and form of the fistula, as also the character of its edges; with a pair of sharp pointed scissors or a knife, introduced into the vagina and covered with his finger, he next scarified the edges of the fistulous aperture. He did not use a speculum, but trusted entirely to the experimenting finger. It is easy to foretell the results of his operations. He united the edges with small tape and the interrupted suture, and made also use of curved needles from silver, gilded, and the sutura circumvoluta. Not satisfied with his results, he invented different machines, too complicated and impracticable to be described here.

Schreger, in 1817, made some improvements. He placed the patient on her belly; with scissors he scarified the edges of the fistula, uniting them with interrupted silk sutures.

Ehrmann made use of his three-branched speculum, curing a case with the interrupted suture.

Wutzer, in Bonn, in 1838, placed the patient on her belly; the perinæum was raised with a hook by an assistant; the labia majora, together with the sides of the vagina, were

drawn outwards by assistants. He then seized with a sharp hook the mucous membrane of the vagina around the fistula, cutting it off with the scalpel to the breadth of three to four lines. The wound was closed by the insertion of long insect needles, placed from three to four lines distant from each other, and the sutura circumvoluta. He avoided piercing the mucous membrane of the bladder, but advocated the puncture of the bladder above the os pubis, for the application of a catheter to carry off the urine. After the operation he placed the patient on her belly in bed, and in order to keep her in that position she was properly buckled with straps. He removed the needles on the third or fourth day. Chelius speaks thus of Wutzer: "He has had the greatest success; of eighteen cases operated on, three were radically cured, and the rest improved. By the careful and precise detail of his observations and trouble, accompanied with a rare perseverance, he has contributed greatly towards perfecting the operation, and by the addition of paracentesis vesicæ in order more completely to draw off the urine, has advanced considerably further than his predecessors. The performance of the operation for vesico-vaginal fistula is always difficult, and may be even dangerous, from severe inflammation of the bladder and peritoneum."

Chelius.—But what is Chelius' favored method of treating these fistulous openings? According to a letter sent to Dieffenbach by him, in 1844, it consists in nothing more nor less than the *extensive application of the nitrate of silver.* "The more surface," he says, "you are able to cauterize, the better the result." Chelius does not think the catheter to be of any value. Of sutures he does not speak favorably, saying, "The cure of a fistula by their use will rarely if ever be effected in one operation, or a real agglutination of the edges be obtained. The sutures, one or all, will cut through the tissues; the urine, by infiltration, will destroy agglutination; the edges will gape as before, and only by a subsequent suppuration and repeated cauterizations will the fistula become smaller or be obliterated.

Kilian, after using blunt hooks to dilate the vagina with, and introducing a silver male catheter through the urethra into the bladder, in order to bring the edges of the fistula better in view, he vivified the margin of the fistulous opening by cutting out a funnel-shaped piece, and closed the wound with the interrupted suture.

Dieffenbach placed the patient in the position for lithotomy; a silver catheter was introduced into the bladder and held by an assistant, and the vagina dilated by different hooks, which were held by other assistants. If the fistula was situated high up in the vagina, he inserted a pair of hooked forceps into the wall of the vagina, above the fistula, and a second one beneath it, by which the vagina was drawn down till the edges of the fistula appeared between the nymphæ. The edges of the fistula were then taken up with a conjunctival hook, and a small scalpel thrust through the tissues between vagina and bladder, half a line deep. The vaginal portion was then removed, by which the outer opening of the fistula became larger than the inner one. The mucous membrane of the bladder was left untouched. In small fistulas, where the separation of the two walls was considered unnecessary, a funnel-like piece was cut out. In applying the sutures in small fistulas, Dieffenbach used a strong curved needle, furnished with a silk thread, and held by a needle holder. The needle was inserted from two to three lines from the edge of the wound. Piercing the mucous membrane of the bladder was carefully avoided. After all the sutures were placed, the wound was cleaned, dried, and painted over with a diluted tincture of cantharides; the sutures were then tied by a double knot and cut off. The vagina was syringed with cold water, dried with sponges and filled up with charpie, when wine was injected to saturate the charpie. A male

catheter was introduced through the urethra, the patient placed in bed on her back, and a glass placed between her thighs to collect the urine. Cold water had to be injected in the bladder several times daily. On the third day the charpie was removed, the vagina washed out, and refilled with charpie. This was repeated several times, when the sutures were removed. The catheter remained in the bladder till the eighth day, when the patient was allowed to pass the urine uncontrolled. The patient was then allowed to leave her bed, cured. "This is the proceeding of a lucky case," says Dieffenbach; "but if the sutures have cut through, which happens mostly on the third or fourth day, the operation has to be renewed at a later day." In larger fistulas, Dieffenbach used sutures made of three to four threads, placing them at a distance of two lines from each other. "The difficulty of obliterating a large fistula," says Dieffenbach, "increases with the distance from the introitus vagina." In cases where the vagina could not be brought down by hooks, he used Ricord's two-valvular speculum. Of fistulas with the long axis in a transverse direction, Dieffenbach finds the operation still more difficult, and gives the advice, wherever it could be done, to transform a transverse into a longitudinal one. (!) In desperate cases, where Dieffenbach could not hope for a favorable result by using sutures, he advocated the actual cautery, saying, "The more desperate the case, the more strongly is the use of the cautery indicated, and the result often the more surprising." What Dieffenbach means by desperate cases we can not define, because on another page (551) of his valuable book on Operative Surgery, he says, "Still less, as in small fistulas, can we expect from the use of caustics or the ferrum candens in fistulas with great defects, where the edges are usually thin and attenuated." As to the cause of the unsatisfactory results so often obtained by the application of sutures, Dieffenbach says, "The sutures either cut all through one of the edges, from the second to the fifth day, or they cut through both edges alternately, and these cuts do not unite again as in other wounds. But more commonly does it happen that mortification takes place around the stitches in the mucous membrane of the vagina. Some of the sutures cut through, urine leaks out, incrustating the mortified spots and sutures, and when the sutures are removed the fistula is larger than before. The cure of vesico-vaginal fistula is one of the most difficult operations in surgery. With grief do we look at the imperfection of our art, accusing it and good mother Nature for their insufficient assistance. For centuries researches have been made for new and sure methods, because the old ones have proved to be worthless; and with shame have we to acknowledge that the progress we have made is but small. The cure of vesico-vaginal fistula is still of a rare occurrence, at least more rare than its failure. Over sanguine in seeing once a fistula of a great extent successfully obliterated by eight sutures, I was full of hope now to be able to defeat the grim enemy for ever; but then I saw a small needle-hole remaining after an otherwise successful operation, or a fistula not larger than the point of a probe, defying all efforts to close it; I saw a fistulous opening of the size of a small pea, after cutting, sewing, cauterising, attain the extent of a large pea, a hole of 5^{mm} diameter, getting as large as one centimetre, and increasing from one centimetre to two centimetres; then I stopped. I have operated on a woman eighteen times, and discharged her unrelieved. I have gathered together large rooms full of these unhappy women from all parts of the country, and I have exhausted all resorts and have cured only a few."

J. v. Metzler, of Prag, a cotemporary of Dieffenbach, published in 1846, in the Prager Viertel Jahresschrift, a treatise under the title "Pathology and Treatment of Urinary and Vesico-Vaginal Fistulas, with a Method of Treatment easily executed and completely successful," in which he says, "To perform

the operation successfully, it is of much importance to have—1, A speculum, serving as a dilator of the vagina. Such an instrument consists of a grooved conical blade, five and a half inches long, three inches wide at the anterior part, one-half of an inch wide at the posterior. The end of the speculum is bent under a right angle, and protected with wood for the handle. The instrument is best when made of silver, and polished to reflect the light on the parts to be operated upon. [Exactly the instrument recommended by Sims.] 2, An apparatus consisting of perforated clamps, gilded needles, and an instrument called 'Rosenkranz werkzeug,' consisting of perforated balls of the size of large shot, by which the clamps are held in contact." His modus operandi he describes in the following manner: "After the patient is placed on her knees and elbows, the dilator is introduced into the vagina and given to an assistant, who in holding it presses it against the rectum. The edges of the fistula are then pared off, which may be accomplished with curved scissors. One line and a half from the mucous membrane of the vagina and half a line from the edge of the bladder have to be cut off; the needles are then applied, and the wound held in coäptation by the clamps; a female catheter is introduced into the bladder by the urethra, and the catheter fastened by a T bandage." Dr. Sprengler, in his review in Canstatt's Jahresbericht, 1846, says, that in six cases operated on by Metzler, the results have been more favorable than with any other known method. If we exchange the Rosenkranz werkzeug with split shot, and the needles with silver wire, we have exactly the method in all its details, and the materials recommended by Sims and so successfully made use of in this country. Metzler may thank the prejudice of his countrymen that the triumph of having initiated so valuable an improvement has been carried off by others. It is nearly twenty years since Metzler published his method, and for the first time introduced this most valuable improvement — the speculum — which enables the surgeon now to undertake the operation for vesico-vaginal fistula with a great hope of success; and yet, at the present day, we see German surgeons grapple with the difficulties to get access to the fistula, following Jobert de Lamballe in dragging down the vagina or uterus with sharp hooks.

Simon, in Darmstadt, has probably operated more successfully for the cure of vesico-vaginal fistula than any one else in Germany; and his method being generally adopted there, I will give here a synopsis of it:

Simon's Method.—If the seat of fistula is high up in the vagina, he uses sharp hooks inserted in the uterus to pull down the vagina and to bring the fistula in sight, or he makes use of Dupuytren's speculum. In fistulas easier of access, the vagina is dilated with levers or the fingers of assistants, and by the additional introduction of a catheter in the bladder, he brings the edges of the fistula better into view. The edges of the fistula are then pared off, including a portion of the mucous membrane of the bladder. For sewing up the pared edges, he uses a double row of interrupted silk sutures. In order to keep the edges better united, the exterior row, made from double silk thread or tape, is applied to assist the main sutures, which are placed from one to one and a half lines distant from the vivified borders This inner row of sutures is carried through the edges, care being taken to avoid the mucous membrane of the bladder, whilst the exterior row of sutures is carried through the *whole thickness of the bladder. (!)* These exterior sutures are so placed that each of them is between two of the main sutures. The exterior ligatures are commonly found to have cut through from the fifth to the seventh day, during which time the wound is closed. Of 19 fistulas so operated upon, 10 were perfectly cured, 5 incompletely, 1 discharged incurable, and 3 died.

Scanzoni, in his "Treatise of the Sexual Organs in the Female, Vienna, 1857," in speaking

of Simon's method, says, "The method as proposed by Simon, and performed in several cases with the most favorable success, is in respect to its surety and simplicity far above all others."

ENGLAND.

The history of surgery in Great Britain shows that, until recently, but little attention has been given to this subject by its distinguished men. John Hunter, Percival Pott, Ch. Bell, Astley and Sam. Cooper, Abernethy, counted amongst the greatest surgeons of the eighteenth century, do not even mention the disease in their writings, and in the nineteenth century it does not fare much better.

Liston, in his "Practical Surgery" (1846), says, "In fistulas of great extent, some apparatus may be fixed to the pudendum, to collect the secretions, and this is in many cases all the relief that can be afforded. In less severe cases, time and the heated iron may accomplish a cure. Attempts have been made, by paring the edges of the opening and introducing sutures, to induce the apertures to close; but little benefit, I have reason to believe, has followed this operation."

Dever employed the actual cautery, sutures and plastic operations, but with little success.

W. Fergusson, like *Bransby Cooper*, has had no experience with the disease.

F. Miller, in his "Practice of Surgery," 1852, speaking of vesico-vaginal fistula, remarks, "It is quite possible to dilate the vagina so as to expose the injured parts; to pare the edges of the opening by a bistoury in situ, or after bringing them down externally by traction with the vulsella, to effect approximation by suture, and to leave a catheter in the urethra, so as to conduct off the urine before it distends the bladder. Sometimes, however, the catheter can not be tolerated, and then the prospect is less hopeful. All this can be done with difficulty to the operator and pain to the patient; but a successful issue is extremely improbable; and so discouraging has been the result of such attempts hitherto, that many surgeons are agreed in the propriety of treating most cases of severe vesico-vaginal fistula by palliative means only."

Syme, in his "Principles of Surgery," 1856, is very particular in giving the directions for introducing a catheter into the female urethra, but of vesico-vaginal fistula and its treatment he does not say a word.

Erichsen, in his "Science and Art of Surgery," 1858, in speaking of the treatment of vesico-vaginal fistula, refers to the operations of Sims in America, though he himself seems to have had no experience in it.

There can not exist a doubt, in Great Britain, that the recent success in the treatment of this disease dates from the introduction of the "American method."

J. Y. Simpson, of Edinburgh. His plan of operating is based on Bozeman's method (in America), though he claims to have made some very important improvements on it. These improvements consist, according to Simpson's statement, in substituting the annealed blue iron wire, a hollow needle, and a splint made of wire. How essential he thinks these improvements, may be judged by what he says in reference to an observation made by Dr. Francis, of New York, of what had been, or rather had not been, accomplished by other nations in curing the disease in question. "But perhaps," says Simpson, "Dr. Francis may be induced to recall his observations when he comes to know the advantages which the iron wire thread sutures, the hollow needle and the splint of wire present in facilitating the operation and securing for it a successful result." Now we may well leave Dr. Simpson in the enjoyment of his improvements, but we do not think that we will ever have an occasion to try either the one or the other of his improvements, even should we fail in accomplishing a cure with the means in our possession.

J. B. Brown, senior Surgeon to the London

Surgical Home. In the September number of the London Lancet, 1858, we find two cases of vesico-vaginal fistula, operated upon by Dr. Brown, according to the method of Bozeman; both cases were cured. Of the first case he says, that he had already operated on the patient sixteen times, and had tried almost every operation recommended. The second was cured by two operations, by employing the same method. In 1863, Dr. Brown read before the Obstetrical Society of London, a paper on vesico-vaginal fistula, in which he stated the results of 55 cases operated upon at the Surgical Home. Of these 55 cases, 43 were cured; 1 much relieved; 5 not cured; 4 still under treatment; and 2 died. Of the 43 cured, in 24 the result followed the first operation; in 8 the cure was accomplished after the second operation; in 5, after three operations; and in 6, in more than three operations. One case died of pyæmia on the seventh day after the operation. The paper contained besides some other valuable observations. Of the number of cases specified, 47 had been over twenty-four hours in labor; 39 over thirty-six hours; 7, two days; 16, three days; 3, four days; 2, five days; 2, six days; 1, seven days. In the whole number of 58 cases (three of which happened in private practice), instruments were used in 29—exactly one-half of the whole number; and in four of these the labor was of less than twenty-four hours duration; and with seven exceptions the patients had been thirty-six hours or more in labor before instruments were used. Of the 58 cases, in 24 only the injury happened at the first labor; in 7, at the second; in 5, at the third; in 4, at the fourth; in 6, at the fifth; in 2, at the sixth; in 5, at the eighth; in 1, at the ninth; in 1, at the thirteenth; in 1, at the fifteenth; in 2, not mentioned. In many of these cases, notwithstanding the existence of the fistula, the patient bore several children before coming under treatment, while in others children have since been born without the recurrence of the fistula.

From the foregoing statistics, Brown says, "It is evident that the cause of the lesion is protracted labor, and not the use of instruments or deformity of the pelvis; and as a necessary conclusion, it follows that vesico-vaginal fistula would scarcely or never occur if labor was not allowed to become protracted." It is not protracted labor, but rather labor with protracted impaction, which has to be considered as the cause of the mischief; otherwise, I fully concur with Brown, and am glad to have found at least one champion to defend the position I have taken against an unfounded accusation.

Brown further remarked, that in America Drs. Sims and Bozeman almost invariably used the scissors for denuding the edges of the fistulous opening, which course necessarily prolonged the operation. Dr. Brown, I think, is mistaken in his views on this point. In regard to sutures, he prefers wire, "though," he says, "Dr. Hayward, in Boston, used silk in prefereuce." Why omit to mention Drs. Sims and Bozeman? Brown prefers silver to the iron wire recommended by Dr. Simpson, of Edinburgh, and is in favor of giving opium, in order to keep the bowels quiet. He prefers the use of an elastic male catheter, to which he attaches a bag. He uses two knives, one for the right and one for the left hand; and fourteen kinds of needles. He takes great care to avoid wounding the mucous membrane of the bladder. "The operation is often completed," he says, "in ten minutes." (Dr. Brown must be a second Bosco.)

T. S. Wells, surgeon to the Samaritan Hospital, in London, has cured several cases by the "American method," but, remarkable to relate, has arrived at the conclusion that fine, strong silk sutures answer even better than wire, "because," he says, "they are more easily passed, can be used in finer needles, cause less irritation of neighboring parts, and are removed much more readily, while union takes place quite as well as when wire is used." Dr. Wells also thinks that the

use of the catheter is a most troublesome part of the after treatment, and believes that it might be dispensed with. He looks upon the catheter as a dangerous instrument, citing a case which occurred in Brussels, where the patient died of Peritonitis, the point of the catheter having caused ulceration of the bladder. (The remarks of Dr. Wells are too prejudiced and partial to deserve a serious consideration.)

The history of the treatment of vesico-vaginal fistula in England would be incomplete, if I did not mention an operation performed by Dr. Gosset, in which he made use of the "gilt wire suture." The operation was performed in 1834, and a description of it was given in the London Lancet, vol. I, page 346. Dr. Gosset says, "Having placed the patient resting on her knees and elbows, upon a firm table of convenient height, covered with a folded blanket, the external parts were separated as much as possible by a couple of assistants, so as to bring the fistula, which was immediately above the neck of the bladder, into view. I seized with a hook the upper part of the thickened edge of the bladder, which surrounded the opening, and proceeded with a spear-shaped knife to remove an elliptical portion, which included the whole of the callous lip surrounding the fistula, the long axis of the ellipsis being transversely. This was readily effected; but, in consequence of the very contracted state of the parts, the next steps of the operation were with difficulty executed; and I should not have succeeded in passing the sutures, had I not used needles very much curved, and a needle-holder which I could disengage at pleasure, the needles being withdrawn with a pair of dissecting forceps after the holder was removed. In this way three sutures were passed; and afterwards, by twisting the wire, the incised edges were brought into contact, and retained in complete apposition until they had firmly united. One of the sutures was removed at the end of the ninth day, the second at the end of the twelfth day, and the third was allowed to remain until three weeks had elapsed. After the operation the patient was put to bed and desired to lie on her face, an elastic gum catheter, having a bladder secured to its extremity for the reception of the urine, having been introduced and retained by means of tapes. She had not the slightest discharge of urine through the vagina after the operation, which completely succeeded in restoring the healthy functions of the parts. The advantages of the gilt wire suture are these: It excites but little irritation, and does not appear to induce ulceration with the same rapidity as silk or any other material with which I am acquainted; indeed, it produces scarcely any such effect, except when the parts brought together are much stretched. You can, therefore, keep the edges of a wound in close contact for an indefinite length of time, by which the chances of union are greatly increased. I have used it now in very many operations, as after extirpation of the breast, tumors of various kinds, and for bringing the lips together after the removal of a cancerous growth, in all of which cases it answered extremely well. In the larger operations above mentioned I do not, however, particularly recommend it, as there is more difficulty in applying it than the common suture. It is in minute and delicate operations, such as hare-lip, staphyloraphy, and for the closure of fistulous openings, where success mainly depends upon a speedy union of the parts, that the advantages of the gilt wire sutures are most manifest." Dr. Simpson, of Edinburgh, enlarges very much upon this discovery. "This," he says, "is certainly a most extraordinary forestalling of all that is now being done and said in the matter of metallic sutures." "Here you have," said Dr. Simpson in a lecture referring to this same case, "the position, the wire sutures, the mode of introducing them, the mode of fixing them, and the after treatment—in short, the whole operation in all its details successfully carried out in England

more than twenty years ago, in the very same way in which it has lately been proposed (!) to carry it out in America." (But where is the blue iron wire, the hollow needle, and the iron wire splint ?)

AMERICA.

In this country, *Dr. J. P. Mettauer, of Virginia*, was the first surgeon who operated successfully for the cure of vesico-vaginal fistula. An account of the cases treated by him may be found in The American Journal of Medical Sciences for 1847. The first of his cases was operated upon in 1830. The fistulous opening leading to the bladder was of the size of a Spanish dollar, and nearly circular. Its edges were denuded, and brought together with eight sutures of leaden wire; the sutures were carried through the walls of the vagina and bladder, and fastened by twisting the wire. They were then cut off at the entrance of the vagina. The opening was perfectly closed, the line of contact of the opposing surfaces measuring two inches. A short, light silver catheter was permanently retained in the bladder. On the third and seventh days the wires were tightened, and removed on the tenth day. The cure was complete and the woman bore two children subsequently without any return of the injury. In his second case, Dr. Mettauer operated eight times, the fistula being diminished but not obliterated. In two other cases he employed silk ligatures, but did not find them to answer so well as the metallic sutures. The result of his operations was so favorable as to induce him to say: "I am decidedly of the opinion that every case of vesico-vaginal fistula can be cured, and my success justifies the opinion."

Dr. G. Hayward, of Boston, without being aware of the operations of Dr. Mettauer (I quote from Sargent), performed his first operation for vesico-vaginal fistula, in 1839 (vide American Journal of Medical Sciences for 1839). Placing his patient as for lithotomy, and etherized, Hayward introduced a large bougie of polished whalebone through the urethra into the bladder, by means of which the posterior wall of the bladder was depressed by an assistant, and thus the fistula came into sight and reach. The margin of the orifice was then pared with scissors or knife and the mucous membrane of the vagina dissected up from its connections to the extent of about three lines. This latter step was taken in order to gain a larger surface for union to take place and partly to obviate the necessity or the liabilty of passing the sutures through the bladder. Finally, a needle carrying a thread was inserted through the mucous membrane of the vagina and the adjacent cellular tissue, about one-third of an inch from the edge of the fistula, carried across the latter, and brought out upon the opposite side through the mucous membrane of the vagina and the cellular tissue, at about the same distance from the margin of the orifice as that at which it was first introduced. The sutures were then tied. After the operation, the patient was allowed to lie upon her side, and a catheter was retained in the bladder for a few days; being removed sufficiently often for cleaning; but later it was only introduced every three hours, to remove what urine had accumulated. Dr. Hayward has operated in this manner twenty times on nine different patients. On one patient, six times; on another, five times; on two patients, twice. Three were entirely cured, five relieved and one was not benefitted. (Boston Medical and Surgical Journal for 1851.)

Dr. F. Marion Sims, of Alabama, contributed to the American Journal of Medical Sciences for January, 1852, a very interesting paper on this subject. Instead of placing the patient upon her back, Dr. Sims places her upon her knees, the nates being elevated, and the head and shoulders depressed; the vagina is then opened and the recto-vaginal septum elevated by means of a "peculiar lever speculum" held by an assistant. Sometimes, where a particularly strong light

is required, the sunlight is reflected from a small mirror upon the part to be examined. The margin of the fistula is pared as in other operations The most distinctive feature in Dr. Sims' operations is the kind of sutures employed. The thread is of annealed silver wire, as fine as horse-hair. The needle is held by a forceps and carries a silk thread having a loop at one extremity, through which the silver wire is passed. The needle is introduced at about half an inch from the edge of the fistulous opening, pushed deeply into the vesico-vaginal septum, without entering the bladder, however, and brought out just at the edge of the mucous lining of the latter, at the margin of the fistula; it is then carried across the opening and thrust through the vesico-vaginal septum in the same manner as before, reäppearing at the same distance from the edge of the fistula. After as many wires are passed as are considered requisite, at proper distances from each other, they are tightened by *clamps*. Dr. Sims terms this suture the "*clamp suture.*" A solid leaden rod, a little longer than the fistula, and a line in diameter, or an equally small silver tube, perfectly smoothed and polished, is perforated at the proper distances by holes, through which the silver suture wires are passed, and secured either by twisting around the bar or by being passed through small perforated shot and bent firmly over; thus the distal ends of the wires are secured. The proximal end of each wire is then, in the same manner, passed through its approximate hole in another similar bar, which is introduced into the vagina and placed parallel with the proximal margin of the fistula; the bars are approximated as closely as it is deemed advisable—not so closely, however, as to superinduce strangulation—and the ends of the wire are secured as in the first case, and cut off.

On the third or fourth day after the operation, an examination is made to ascertain the condition of the parts, and again on the sixth or seventh day; if the sutures are not producing any unpleasant effects, they are allowed to remain until the ninth or tenth day. In order to prevent any injurious action of the urine upon the wound, Sims retains in the bladder a silver catheter somewhat of the form of the letter S, and perforated with three rows of small holes. The recumbent posture is to be strictly maintained, and the catheter is to be worn for at least fifteen days, when Sims usually finds that the orifice has become pretty firmly closed. The bowels are not permitted to be moved, and to secure their quiescence opium is used as freely as may be necessary.

Dr. Sims has since made some alterations in his method. He has given up his clamps, using only the interrupted silver wire suture; he also places the patient on the left side when operated upon. These alterations have been made known by Sims in a very curious pamphlet, entitled, "Silver Sutures in Surgery: an anniversary discourse delivered before the New York Academy of Sciences, by F. Marion Sims, M. D, Surgeon to the Women's Hospital in New York, 1858." In that discourse (in a language never heard of since the days of Bombastus Paracelsus), Sims says: "In 1845 I conceived the idea of curing vesico-vaginal fistula, and entered upon the field of experiment with all the ardor and enthusiasm of a devotee. After nearly four years of fruitless labor, silver wire was fortunately substituted for silk as a suture, and lo! a new era dawned upon surgery; and "I declare it as my honest and heartfelt conviction, that silver as a suture is the great surgical achievement of the nineteenth century. For my country I claim the honor of this imperishable discovery. I will place for ever beyond cavil my claims and agency in this discovery;" and in his "nowhere extravagant language," he goes on to say, "I shall yet live to see the day when the whole profession of the civilized world will accord to this simple discovery the high position of being the most important contribution as yet made to the surgery of the present century.

The only thing at all comparable to it is etherization; and in practicable results of permanent benefit, it is absolutely contemptible when compared with those arising from the universal use of silver sutures in the broad domain of general surgery. The next eight years will not find an educated physician any where who will dare to use silk sutures." "So far as it concerns my experience, personal narrative, claims as a discoverer or defense against aggression, I have a right to declare them openly from the house-tops;" and "as concentrated efforts have been made in various quarters to rob me of the full credit for my labors, I have thought it due to truth, to justice, to posterity, and to myself, to place permantly upon record a history of the circumstances attending this discovery." "But," says the *lunatic* Messias, who has been sent to resurrect surgery from the state of dilapidation into which it had fallen, "it was all the result of a providential train of circumstances over which I had no control, and that it pleased God to lead me in this direction, in spite of my predilection."

Purmann, in *Breslau, Germany*, made use of the silver wire in wounds of the tongue, as far back as 1740. (Heister's System of Surgery.)

Mikles, in his Elements of Surgery, published 1746, employed silver and gold thread in the operation of hare-lip.

Gosset, of London, used gilded wire in extenso in 1834, operating for *vesico-vaginal fistula*, and other surgical diseases. And his own countrymen, *Le Vert, of Alabama*, in his experiments on the use of metallic ligatures (published in the American Journal of Medical Sciences, May, 1829), had made use of silver and gold, and proved their innoxiousness in animal tissue. If, in the face of such indisputable historical facts, the discovery of silver sutures can be still claimed "the greatest achievement of the nineteenth century," Dr. Sims in his claims as a discoverer does not seem to be as successful as he has been in the use of the metallic wire; and not more successful is he in the discovery of "his" other valuable improvements — the speculum, the clamp, and the perforated shot — the speculum and clamps being already used by Metzlar, in Prag, in 1846 (vide above history of operation of vesico-vaginal fistula in Germany); and the perforated shot in tying the sutures being suggested by Maclean, in Dublin, and used by Sir P. Crampton and Dr. Cusack in cleft palate, in 1844 (vide Braithwaite's Retrospect, part II, page 115). But Dr. Sims thinks probably with Goethe, "Nur die Lumpen sind bescheiden"!

Dr. N. Bozeman, of Montgomery, Alabama, published, in 1856, a treatise entitled, "Remarks on Vesico-Vaginal Fistula, with an account of a new mode of suture, and seven successful operations," in which he pointed out the objections to Sims' "clamp suture," which he considered the essential element of Sims' method. He invented a new method, and from its construction, mode of action, and the circumstances which led to its adoption, called it the "*button suture.*" The essential parts of this apparatus consist of silver wire for the sutures, a perforated metallic button or plate, and perforated shot to retain the latter in place. The button, says Bozeman, "possesses several peculiarities. It may be either of lead or silver. The former, hammered out to the thickness of one-sixteenth of an inch, answers the purpose tolerably well. The latter can be made still thinner, and does better on several accounts; it is lighter, less likely to yield under pressure, admits of a higher polish, and allows the wires to be drawn through the small holes without dragging." "The object of the button is to cover the fistulous opening after the introduction of the sutures, and its size and shape will therefore vary somewhat according to circumstances. The shape of those that I usually employ is oval; but they may be circular, semicircular, L or T shaped, to suit individual cases. The size will also necessarily vary. But whatever the shape or

size, it is a matter of great importance that the under surface should be slightly concave and the edge turned up. Along the middle of the button are arranged perforations for the reception of the sutures, which should be sufficiently large to admit two thicknesses of the wire freely. The number of these openings will depend of course upon the number of the sutures, which are usually placed about three-sixteenths of an inch apart. Number three shot are used and perforated for the passage of the wires. I generally level the edges of the fistula upon the vaginal aspect to a greater extent than is recommended for the clamp suture. The object of this is to obtain large surfaces for agglutination, and at the same time to admit of a sufficiently firm degree of approximation to prevent if possible the least passage of urine through the fistulous opening. The edges of the fistula having been pared, the wire sutures are to be lodged in their respective places in the usual way, by attaching them to the ends of silk ligatures previously carried by means of a needle through the septum from one side of the fistula to the other. But in connection with this part of the operation, there is some difference between Dr. Sims' procedure and my own. In the first place, I do not usually take so firm a hold of the tissues, the space between the entrance of the needle and the edge of the fistula rarely, if ever, exceeding half an inch; and it matters not whether the parts be indurated or not, as the wire is not likely to cut out very soon. Secondly, it is not necessary to observe the same scrupulous care in entering and bringing out the sutures upon any exact line with each other; for, as will be hereafter understood, each one is in its action entirely independent of the others. Thirdly, instead of being obliged always to place the sutures parallel with each other, I have it in my power, if the peculiar nature of the case requires it, to insert them in any direction, and I am thus enabled to bring within the sphere of successful treatment a large class of cases, which, owing to the irregular shape of the fistula, and the scarcity of tissue not admitting of extensive paring, cannot be subjected to the clamp suture. In regard to the needle, I am in the habit of using one that is short, straight and spear-pointed, in length varying from a half to three-fourths of an inch. The needles are carried by a needle-holder. The introduction of the needle with reference to the structure to be penetrated, is justly considered a matter of no little importance. Dr. Mettauer and some others recommend that the instrument be carried entirely through the vesico-vaginal septum. Drs. Sims and Hayward strongly disapprove of this practice, on the ground that other fistulas may thus be produced, and I fully agree with them. Indeed, I consider that too much care cannot be taken to avoid piercing the mucous coat of the bladder; and the needles, instead therefore of being carried through the septum, should be brought out at the edge of the opening in the vesical sub-mucous areolar tissue. As heretofore mentioned, the wire for each suture should be about eighteen inches in length, and the sutures should usually be placed not more than three-sixteenths of an inch apart. Although, if the tissue be sufficiently abundant to admit of an easy approximation without too great a strain upon them, an interval of one-fourth of an inch may be left. The next step in the operation is to draw the raw edges closely in contact, by bringing the opposite ends of each wire together. This may be readily accomplished with an instrument which I have invented for the purpose, and called the suture-adjuster. In this way the edges of the fistula are gently forced together, and for the time being the stiffness of the wire will prevent their separation. A button is now placed upon the wires, its concave surface corresponding to the vesico-vaginal septum, and carried down in contact with the septum. The wires being again held in the left hand, the button should be pressed gently against and adapted to the surface of

the parts. The shot are now passed down over the approximated ends of each suture to the convex surface of the button, and here each one is successively grasped with a pair of strong forceps and held against the button, while traction is made upon the corresponding suture, in order to bring the vaginal surface of the septum in close contact with the concave surface of the button, and insure close adaptation of the edges of the fistula. This having been satisfactorily accomplished, sufficient force is exerted upon the forceps to compress the shot and thus prevent its slipping. The operation is then concluded by clipping off the wires close to the shot. The apparatus is generally allowed to remain on not more than ten days."

Bozeman says, in his pamphlet, "by means of the button suture, quietude and an accuracy of approximation are secured, to a greater degree than by any apparatus that has ever before been invented, two circumstances upon which the cure of fistulas oftentimes solely depend. But probably one of the most important advantages of the button suture is the protection that it affords to the denuded edges of the fistula against the poisonous influence of the urine in case of double fistula. Leucorrhœal discharges are also more or less harmful."

I have given here the method of Bozeman with minuteness. The success he and others have had with it is known, but it may not be without interest to look to what it has been reduced.

Sims says, "Bozeman has mistaken the philosophy of the suture; his button is an unnecessary addendum. When the button was to be applied, I found it had to be convex instead of concave, as so particularly recommended by Dr. Bozeman." Dr. J. B. Brown, of London, has cut the button in as many pieces as he applied sutures. Dr. Simpson, of Edinburgh, who operated on one case according to Bozeman's plan, says, "The operation did not succeed, and I should not be inclined to repeat it;" he invented his open wire splint, instead of the button, "preventing thereby the included portion of the vesico-vaginal septum from being moved either longitudinally or transversely"—a condition which he thinks is absolutely necessary to form a perfect union, asserting that in Bozeman's button no provision was made against the movements which were produced in the surrounding parts and lips of the fistula by the spasmodic working of the muscular wall of the bladder. Dr. D. H. Agnew, of Philadelphia, has also thought fit to alter the button. His substituted lead button has only a centre-piece with holes, through which to pass the sutures, and between this centre-piece and the circumference on either side two half-moon pieces are cut out. He reports a successful case obtained through its use, saying, "Had I not adopted this button I feel satisfied failure must have ensued, as I was obliged to press back in two places small portions of the mucous membrane of the bladder, which had worked down between the approximated edges of the wound, and which were easily discovered through the apertures cut in the button."

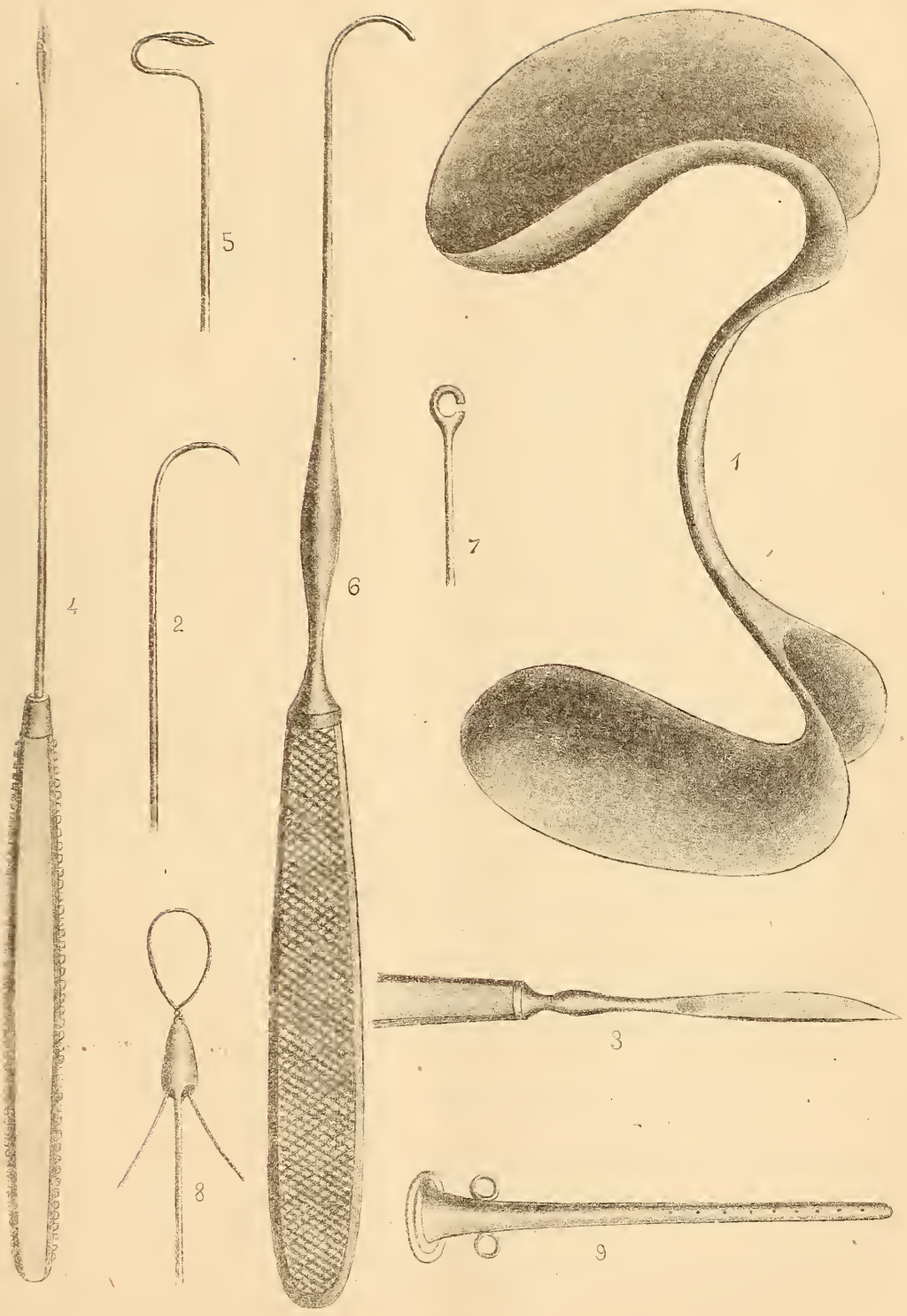
What alterations next? The button successfully reverted, cut in pieces and broken through, being now stripped of its most essential character, will eventually be so modified as that nothing will be left but the holes. Such is the irresistible power of progress. Just as Sims had to relinquish his clamp, so will Bozeman seal his button to the tomb of the Capulets, and that too with no abatement of his former success in operating.

There can be no doubt but that the progress so lately made in the operation for the cure of vesico-vaginal fistula is mainly due to the exertions of Sims and Bozeman, in this country; to the application of a proper speculum to get easy access to the fistulas, and the use of metallic sutures, and we may safely assert that since in the two cities of New York and New Orleans more cures of that loathsome disease have been accomplished

than in the whole of Europe. This should be sufficient to recommend the system to which Verneuil, of Paris, has so graciously given the name of the *American* method. But what shall we say when we find an American surgeon at so late a date as 1858, in his "Lectures on Surgery," say, "Attempts to cure this affection by the use of sutures, have so generally failed that it is unnecessary to do more than allude in general terms to the method in which these operations are performed;" and "the autoplastic operations of Mr. Jobert, in Paris, furnish the most hopeful resource," and again "of the several methods proposed for the cure of this melancholy accident, not one can be relied on." Indeed there is something more melancholy in such a lecture than the melancholy accident!

In the preceding pages I have attempted to give a general view of the historical records of the operation for the cure of vesico-vaginal fistula. I am not conscious of having omitted any method or proposition possessing any intrinsic value. That I have not mentioned all the different methods concerning which we know no more, than the assertion of the author, that by using his method, "the most terrible cases may now be treated with a certainty of success not heretofore attainable," I hope I may be excused.

In speaking of my own views and operations, if I look upon what others have accomplished, I feel that my own labors do not amount to much. Error is the common lot of mankind; where I have committed errors, let others correct them.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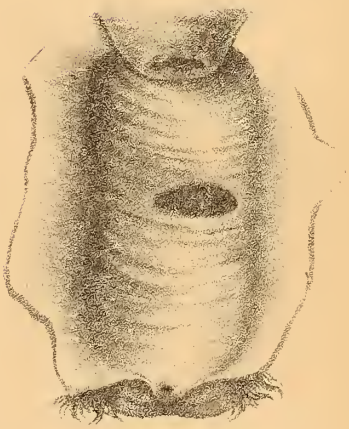

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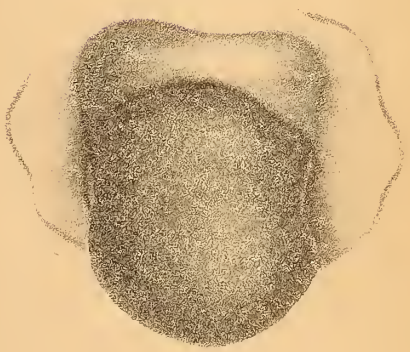

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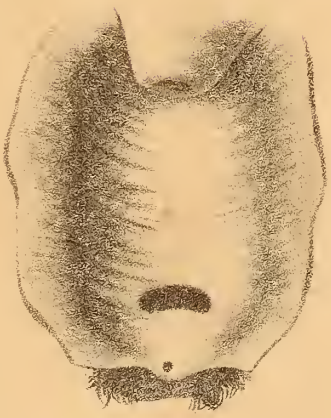

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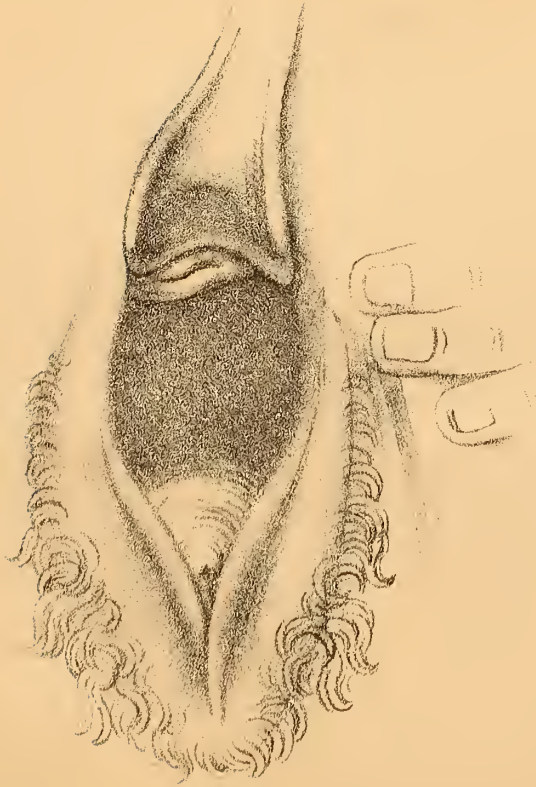

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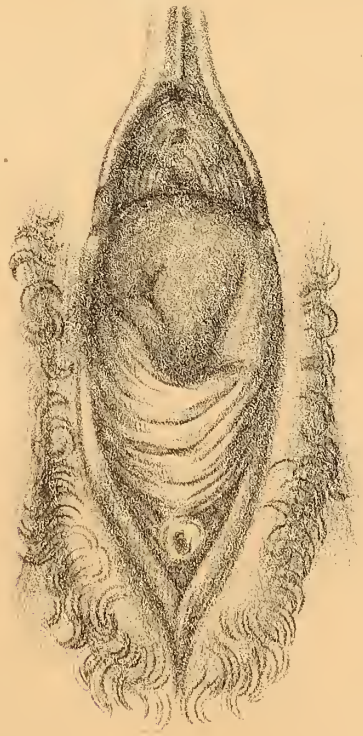

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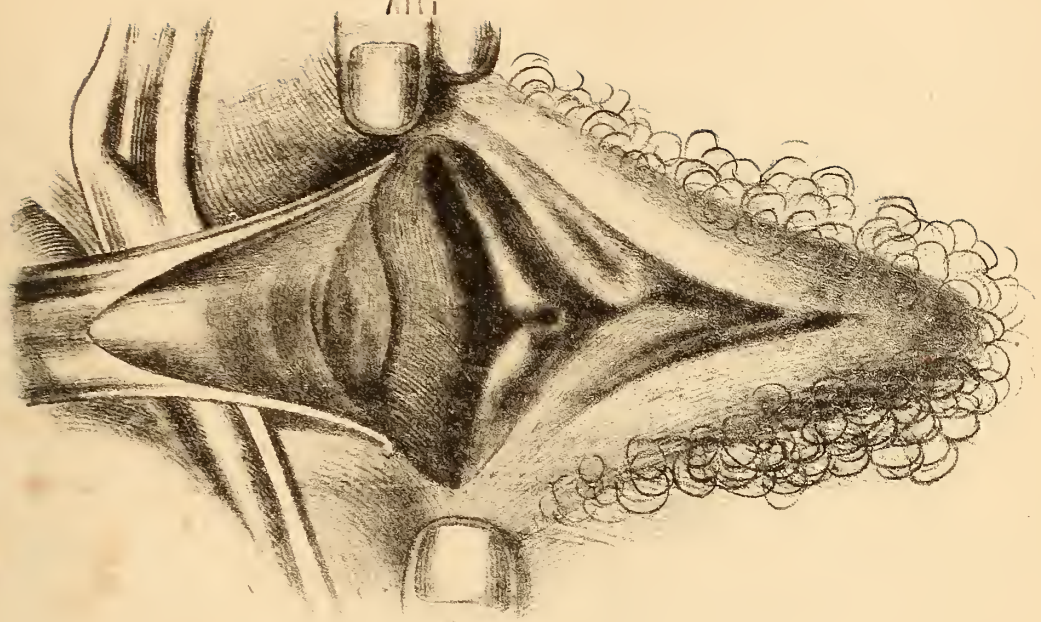

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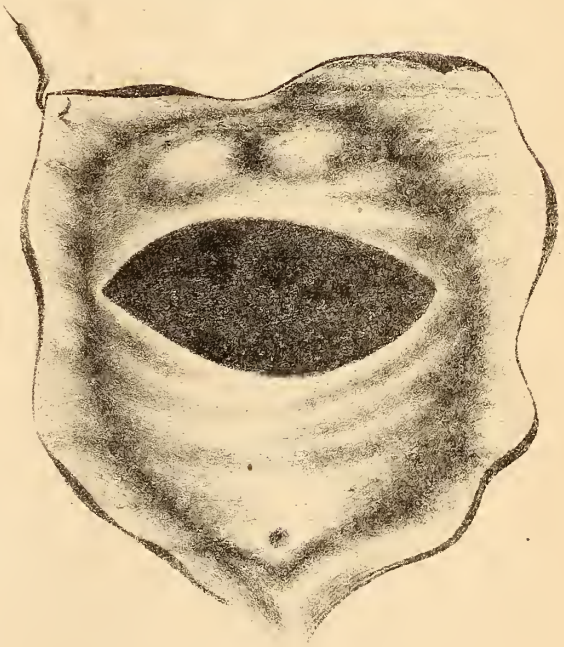

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